
Food Services Reference



U.S. Marine Corps

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FORWARD

1. PURPOSE.

Marine Corps Reference Publication 4-11.8A, *Food Services* provides guidance for commanders, staffs, logisticians, food service officers, supply officers, food technicians, mess chiefs, subsistence supply and food service Marines. It describes Marine Corps food services operations in an expeditionary environment, discusses the Marine Corps Field Feeding System (MCFFS), and also incorporates information and procedures developed during the MCCDC food service quick response study and field trials. Tactics, techniques and procedures from other Service manuals that apply to Marine Corps operations have been incorporated as well to provide comprehensive, informative coverage of Food Services operations in the Marine Corps.

2. SCOPE.

MCRP 4-11-8A introduces the Marine Corps Food Service organization and support structure, discusses the general responsibilities of food service personnel, the rations/menu types used in field feeding, details planning considerations, safety issues, equipment, sanitation, training, and depicts an overview of the Marine Corps Field Feeding System. The MCFFS supports the MAGTF in an expeditionary environment through flexibility in feeding methods. The MCFFS furnishes the capability to provide Marines the right meal at the right place at the right time. The feeding methods, rations, and equipment described herein provide commanders a variety of options to support sustained feeding operations in an expeditionary environment.

3. SUPERCESSION. None.

3. CERTIFICATION.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS

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TABLE OF CONTENTS

CHAPTER 1. Overview	Pg
1001. Introduction/Historical Perspective.	6
1002. Food Service Support.	7
1003. Food Service Support Responsibilities.	7
1004. Theater Subsistence Supply Responsibilities.	8
1005. Tactical Food Service Responsibilities	
1006. CSS Support.	10
1007. Operations.	10
1008. Main Elements of MCFFS.	10
1009. Combat Field Feeding/Base Camp Feeding.	11
1010. Area Feeding.	11
1011. Forward Unit Feeding.	11
1012. Support Under Adverse Conditions.	11
1013. Military Operations Other Than War (MOOTW).	12
1014. Environmental Training and Integration.	12
 CHAPTER 2. MCFFS Rations and Menus	
2000. Main Elements of MCFFS.	13
2001. Rations	13
2002. Feeding Standard	16
 CHAPTER 3: MCFFS Equipment Overview	
3000. Overview	18
3001. Individual Ration Heating Devices	18
3002. Tray Ration Heating System (TRHS)	18
3003. Field Mess Equipment	19
3004. Equipment From Other Services	25
3005. Future Equipment.	29
 CHAPTER 4. Deployment Planning	
4000. Deployment Planning	31
4001. Host Nation/Contract Feeding	31
4002. Unit Preparation	32
4003. Supply Levels	36
4004. Other Planning Requirements	36
 CHAPTER 5. Deployment	
5000. Techniques	37
5001. Unit Movement	37
5002. Class I Site Selection	37
5003. Field Mess Site Selection	39
5004. Field Mess Site Layout	41
5005. Field Feeding Procedures	41
5006. MCFFS Accountability	43
5007. Subsistence Storage at Field Mess Sites	44
5008. Cold-Weather Field Feeding	46

5009. Hot-Weather Field Feeding	46
5010. Camouflage	46

CHAPTER 6. Class I Storage and Issue Procedures

6000. Subsistence Storage at the Class I Point	47
6001. Perishable Storage	47
6002. Semi-Perishable Storage	48
6003. Handling Of MREs in Freezing Temperatures	49
6004. Storage and Handling of the Ration Supplement Flameless Heater (RSFH)	49
6005. Sanitation at Subsistence Storage Points	50
6006. Pest Control	51
6007. Security	51
6008. Inspections	51
6009. Ration Issue	53

CHAPTER 7. Redeployment

7000. Planning Factors	54
7001. Preparing For Redeployment	54
7002. Closing The Deployment Site	54
7003. Moving The Unit To The Home Station	54
7004. Accounting For Residuals	54

CHAPTER 8. Safety and Sanitation

8000. Overview	55
8001. General Considerations	55
8002. Combat Field Feeding	56
8003. Base Camp Feeding	57

CHAPTER 9. Protection from Contamination

9000. Personnel Protection	61
9001. Food Protection	61
9002. Food Inspection	61
9003. Disposal	61
9004. Decontamination	61

APPENDIX A. Glossary

APPENDIX B. Acronyms

APPENDIX C. Food Service Deployment Checklist

CHAPTER 1

OVERVIEW OF MARINE CORPS FOOD SERVICE

1001. Introduction/Historical Perspective. Secretary of War John C. Calhoun reported to Congress in 1818 that *“Food sustains the immense machinery of war, and gives the impulse to all its operations; and if this essential be withdrawn, even but for a few days, the whole must cease to act.”* No other single factor has the impact on morale of the troops as the quantity and quality of their food.

a. Field rations have evolved significantly since our nation’s beginning. Initially, individual colonies provided subsistence for their militias. Inefficiencies of this system resulted in the establishment of the office of Commissary General by the Continental Congress, who delineated the “daily ration” on November 4, 1775. However, this ration was seldom enjoyed by the troops. In fact, during the winter spent at Valley Forge, Washington’s troops subsisted principally off of “fire cakes”, made from a paste of flour and water. Washington stated that the Army would *“starve, dissolve, or disperse in order to obtain subsistence”*.

b. By the Civil War, conditions had not improved much. When food was available, it was generally lacking in nutritional balance. Most troops ate little more than salted meat and hardtack. Coffee, however, was generally available in large quantities. Field feeding improved somewhat during World War I. Cooks were becoming school-trained on proper food handling techniques, dehydrated vegetables appeared on the menu, and refrigeration became available. The food was not gourmet, but at least it was plentiful. In 1917-18, the United States spent over \$727 million on subsistence, more than was spent in all previous wars. The first packaged operational rations, “K” and “C” rations, were introduced during World War II. Additionally, most of the field food service equipment we use today was first employed in WWII to prepare “A” and “B” rations for those not on the front lines.

c. By the early 1950’s, there were more than 650 recipes. In Korea, men in forward areas were provided 2 hot meals a day. Generally, it was believed that the closer you were to the front, the better you ate. In Vietnam, troops at fire-support bases ate as well, if not better, than troops in the states. There were dairy and ice cream plants in country being managed by American companies. Occasionally, units on patrol had hot meals delivered on site in insulated food containers. When hot meals could not be served, troops had the Meal, Combat, Individual (MCI) and the Long Range Patrol Ration, nicknamed “Lurp”. Although not as acceptable as hot meals, they were nutritionally adequate to sustain troops for days at a time.

d. In the early 1980s, the Meal, Ready-to-Eat (MRE) was developed to replace the MCI. Its packaging is lighter, yet more durable, and its contents have less sodium and fat than the MCI. Three MREs provide 3900 calories per day, 4500 when augmented with bread, shelf stable. Although studies have concluded that individuals can subsist solely on MREs for up to 21 days, morale generally begins to suffer after two or three days. The tray ration, or “T” ration was developed as a means of providing hot meals to forward deployed units and as an effort to provide a bridge between the MRE to “B” or “A” rations. The “T” ration, while more acceptable than the MRE, begins to have the same affect on morale very quickly. Commanders and troops expect and deserve hot meals as soon as possible. As the Marine Corps develops the concepts of Operational Maneuver from the Sea (OMFTS) and Ship-to-Objective Maneuver (STOM), the mission of providing hot meals to forward units becomes an increasingly difficult challenge.

1002. Food Service Support.

Food services are a command support service – in that it is an inherent capability normally available at the organizational level. As a command support service, it is a sub-function of services, categorized under the warfighting function of logistics. However, staff cognizance for food services is in a period of transition. Emerging concepts with regard to the supporting establishment, envision a higher degree of outsourcing and improved business practices in order to free personnel and return structure to the operating forces. Moreover, those services functions which are currently the responsibility of the operating forces, are also being examined to see if they might be accomplished more efficiently elsewhere. Hence, the trend for services responsibility is a shift toward more centralized control and movement incrementally farther away from the FEBA. The impact on food services is a continual examination that will refine equipment and rations, reduce manpower expenditure and potentially

centralize control. While the final outcome of how food services will look in an OMFTS environment is by no means certain, in coming years, responsibility for food services will shift from being a command support service, to being a function provided under the auspices of services by the CSSE of the MAGTF.

As Logistics is a national and service responsibility – so are subsistence and food service. Subsistence and food service in the joint arena are also considered areas of common item support. Accordingly, responsibility for supply of subsistence items after D+60, is normally assigned by the CINC to a service component command, normally the dominant or most capable service user. While allied nations are also responsible to provide their own subsistence support, coalition efforts in the past have received at least temporary support from the most capable U.S. service until allied logistics capabilities matured. Prior to that first 60 days and the establishment of a common item support manager, these operations have often been supported by the Marines.

1003. Food Service Support Responsibilities.

a. Department of Defense (DOD). Subsistence management entails the best use of food supplies to satisfy the nutritional needs of Marines. Two DOD organizations have subsistence management responsibilities that impact on the Marine Corps Field Food Service System (MCFFS).

1. Defense Logistics Agency (DLA). As a staff headquarters, DLA controls buying, inspecting, storing, and distributing food and ration supplement sundries packs (RSSPs) worldwide.

2. Defense Supply Center Philadelphia (DSCP). DSCP is an operating element of the DLA, responsible for procuring, inspecting, storing, and distributing subsistence supplies. DSCP operates a number of storage and distribution centers. It is also responsible for areas under the Worldwide Information Management System (WIMS). Under the WIMS, the Marine Corps submits requirements for war reserve stocks, by NSN, to DSCP. These are based on contingency plans for deployment.

3. Deputy Chief of Staff for Installations and Logistics (LFS-4). The DC/S, I&L (LFS-4), is the principal staff advisor to the Commandant of the Marine Corps on subsistence matters. LFS-4 is responsible for reviewing, coordinating, evaluating, and justifying programs and budgets. Under contingency deployments, LFS-4 approves the use of the RSSPs and determines the initial item composition. The theater commander may recommend changes in items and quantities as required by theater conditions. LFS-4 also provides policy guidance, supervision and technical assistance on the acquisition, storage, issue, and accountability of subsistence items and equipment, facility design, sanitation issues, and contracted food services. It also works with DSCP to develop plans for the use of excess stocks and rotating WRS.

1004. Theater Subsistence Supply Responsibilities.

Subsistence supply support after D+60 is normally an Army mission. FM 10-23 details U.S. Army subsistence supply procedures in a theater of operations. At the MARFOR/MEF level, Force commanders are responsible for determining operational feeding policy. A feeding concept is established early in planning to reduce potential problems during operations. The normal lead-time for rations is 60 days. The climate and geographic environment, availability of fixed facilities, buildings and equipment, undesirable features relative to subsistence storage and sanitary conditions within the AOR, and the impact of prolonged subsistence on MREs on troop morale all are weighed in development of the feeding concept. The FSO at the MEF and major subordinate command level makes specific recommendations to the commander regarding the implementation of the operational feeding policy and development of the feeding concept.

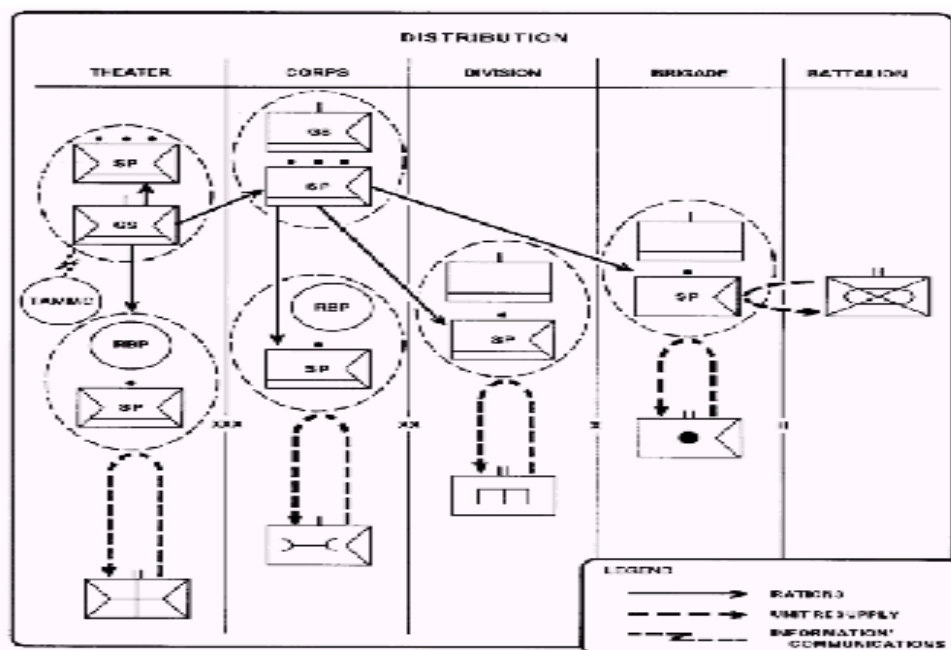


Figure 1-1. Flow of rations in the theater of operations

1005. Tactical Food Service Responsibilities.

a. The commander is responsible for the field food service operation of his unit. His duties and those of other food service personnel are described below:

1. Ensure the unit has all authorized field kitchen equipment listed in the table of equipment (T/E).
2. Ensure that authorized administrative, medical, field sanitation teams, and supply personnel are available and trained.
3. Ensure that the unit basic load, (a minimum of three days supply of operational rations) is on hand.
4. Ensure that adequate transportation support capabilities are available to move personnel, equipment, subsistence, ice, water, fuel, trash, and residual rations.
5. Ensure that sufficient mess attendant support is available for field messes preparing "A", "B", "T" or UGR ration meals.
6. Ensure that personnel data (present-for-duty by service component, remote site feeding, and personnel paying by cash) is provided to the mess chief in a timely manner.

b. Food Service Officer. The FSO acts as a liaison between the commander and the mess chief in all matters pertaining to the food service operation. The FSO's main responsibilities are to advise commanders, assist the mess chief, and assist in resolving food service-related problems. The FSO must be familiar with all areas of the MCFFS. He must provide assistance in field operations from as early as possible in the planning phase until the mission is complete. Detailed guidance pertaining to performance of specific duties will be discussed throughout this publication.

c. Mess Chief. The mess chief is charged with providing the best possible food service support to the Marines on the battlefield. The mess chief must know all aspects of field food service operations. He must make

the most efficient use of assigned personnel, equipment, facilities, and supplies. The Mess Chief must coordinate closely with the commander and the FSO. He must be involved as early as possible in the operational planning phase. He must continually improve his food service team's proficiency, by ensuring that all assigned personnel are properly trained to work as part of the team.

d. Food Service Personnel. The MCFFS provides food service Marines to prepare all meals in the family of rations. Staffing is based on the feeding standard as established in Chapter 1, and gives commanders the capability to serve two "A", "B", "T" or UGR ration meals every day, METT-T dependent.

e. Messmen Support. When the commander determines at which "A", "B", "T" or UGR rations will be served, the unit must provide mess attendant support to the food service section. The use of "A" and "B" rations increases the sanitation workload. Staffing of food service personnel was not designed to handle this increase without unit augmentation. The number of personnel required depends on the unit feeding strength, mission, and remote site feeding versus the consolidated feeding requirement. Consult with the food service officer when determining required mess attendant staffing.

1006. CSS Support.

Material readiness platoons in the FSSG are tasked to provide the personnel and equipment to support MAGTF in an operational theater. Class I CSS units support all subsistence requirements once the theater has matured sufficiently to accommodate the family of rations. Material readiness platoons work under the operational control of the respective CSSE. Platoons are organized to provide support at GS and DS levels. Teams from the subsistence platoons operate at the DS ration issue points. Direct support teams are under the operational control of the supported DS unit commander while operating in the DS unit's AO.

1007. Operations.

Food service personnel support Marines in OTW operations ranging from humanitarian assistance, to peacekeeping operations, as well as in armed conflict. Differences in feeding operations among GCE, ACE, and CSSE will reflect the differing missions of each element. The MCFFS adjusts for those differences, and provides a variety of equipment and a family of rations to support any situation.

1008. Main Elements of the MCFFS.

As a total system, the MCFFS has three main elements. They are a family of rations; equipment to support storage, distribution, and preparation of rations; and personnel to operate the system. This system also recognizes the uniqueness of medical units and special considerations required for the health care of Marines. The Tray Ration Heating System (TRHS), is ideally suited to for use by mobile units while the static field mess better supports a base camp. New equipment under development will further enhance food service flexibility. The new field sanitation unit, when fielded, will replace the current immersion water heaters and a rapid deployment kitchen will eventually replace the traditional static field mess.

a. Deployment Plans. Deployment plans should call for using MREs initially and, as the theater stabilizes, progressing to meal selection from a family of rations that includes the MRE, "A", "B", "T" and UGR rations. Medical units deployment plans must include the medical "B" ration. The operations order (OPORD) will provide food service personnel with the guidelines on the ration mix for the operation.

b. Ration Availability. Not all types of rations may be available in each AO at the onset of hostilities. The AO Class I manager (with guidance from the commander) must determine the rations to be moved forward using a push system. When logistics personnel, rations, transportation, and equipment are in place, a pull system may be implemented. Using the pull system, the unit places a demand (ration request) and CSS elements react to meet those demands.

1009. Combat Field Feeding/Base Camp Feeding.

The term *combat field feeding* refers to expeditionary feeding of forward units or elements, both in combat and in training. When supporting units on the move, field feeding must be highly mobile. Employment of the traditional

static field mess is usually not feasible in supporting rapidly moving units. The term *base camp feeding* refers to what most Marines know as the traditional field mess. Base camp feeding can also be employed in both combat and in training, depending upon the mission. Frequently, CSS and ACE elements operate in environments conducive to this type of feeding.

1010. Area Feeding.

a. Area feeding is food service support provided by a feeding unit to Marines of other units in or passing through the vicinity. Feeding responsibility is based on dependency or through task organization. Area feeding is flexible because tasks are organized in planning documents for required cooking resources. Unit commanders, team leaders, and first sergeants coordinate directly with each other. Technical assistance should be obtained from the supporting food service technician during the planning phase. Timely coordination is critical to ensure that adequate subsistence is on hand at the designated feeding unit. The feeding plan and dependency associations should be in the Administration Annex or the Logistics Annex of the operations orders and plans.

b. The MCFFS can also be used during task-organized operations and deployments. Commanders ensure that Marines are subsisted at the established standard through the use of area feeding, battalion-level feeding, and remote feeding. The FSO plays a critical role in task-organized or area feeding situations. He must be called on during the earliest possible phases of planning for an operation.

1011. Forward Unit Feeding.

Under the MCFFS, infantry units have food service Marines and equipment assigned to their T/O and T/E, providing commanders a capability to employ his resources as the tactical situation permits. One option available is for food to be prepared in the “rear” and sent forward to be served. A second option is to send food service Marines (equipped with a TRHS and a HMMWV) forward to support different/separate units. This option provides a choice of cooking some of the food at a field mess and completing the meal with limited food preparation forward. The commander should control these arrangements through an approved field feeding plan or SOP.

1012. Support Under Adverse Conditions.

The MCFFS enhances the commander’s ability to support Marines while under adverse conditions. It reduces requirements for labor, water, and fuel and, when utilizing the heat-on-the-move option of the TRHS, increases mobility, effectiveness, and responsiveness. This system also reduces the administrative burden on unit commanders and food service personnel.

1013. Military Operations Other Than War (MOOTW).

Although methods of feeding and accountability described in this publication are designed to support military personnel, they could apply to feeding a civilian population needing assistance. However, the primary mission of food service and subsistence personnel is to provide food service and Class I CSS support to deployed forces. FSOs may be required to provide assistance in the development of requirements documents for the contracting of food service support in situations which require the support of a civilian population.

1014. Environmental Training and Integration.

The Marine Corps’ environmental vision is to be a national leader in environmental and natural resource stewardship for present and future generations. Environmental stewardship must be an integral part of all deployments and operations. The MCFFS will provide required levels of food service support while permitting environmental concerns to be properly addressed. Marines are expected to serve as the Corps’ environmental stewards. Everyone has a personal and professional responsibility to understand and support the Marine Corps’ environmental program. Proper management of resources and protection of our environment must be integrated in all training and operations planning. Commanders must stay current with federal, state, local, and/or host-nation laws regarding environmental concerns. The most stringent requirements must be complied with during all field operations.

CHAPTER 2

MCFFS RATIONS AND MENUS

2000. Main Elements of the MCFFS. As a total system, the MCFFS has three main elements. They are a family of rations; equipment to support storage, distribution, and preparation of rations; and personnel to operate the system. This system also recognizes the uniqueness of medical units and special considerations required for the health care of Marines.

2001. Rations. A ration is an amount of food that is nutritionally adequate to subsist one person for one day. The Marine Corps has fielded a family of rations, and commanders must choose the appropriate ration mix according to their tactical and logistical situations. (The unitized "B" ration and the packaged operational rations constitute the primary rations used in the field.)

a. "A" Rations. "A" ration supplements are perishable items add variety, dietary fiber and troop acceptability to the "B" ration feeding plan. Supplements normally consist of milk, bread or bread-like products, apples, oranges, lettuce, tomatoes and a combination of 50% fresh and 50% dehydrated eggs. "B" rations consist of semi-perishable items, mainly canned and dehydrated, which do not require refrigeration. Perishable items require refrigeration and increased transportation, fuel, equipment, and water requirements. The workload, liquid and solid waste disposal, and sanitation problems for food service personnel are also increased. Concurrent with the introduction of perishable rations into the theater of operations, refrigerated transportation and storage assets are required from the receiving theater subsistence distribution activity to the using field mess. Peacetime requirements for refrigeration continue to be satisfied by civilian direct hire and contractors. Other possible sources of refrigeration include existing T/E assets, host-nation support, or local purchase from commercial sources.

b. Unitized "B" Rations. Unitized "B" rations consist of semi-perishable items, mainly canned and dehydrated, which do not require refrigeration. They are unitized in 100 portion modules, under a single National Stock Number (NSN). Unitized "B" ration modules contain everything necessary to prepare 100 servings of a particular meal, to include paper products. There are currently 10 breakfast and 10 lunch/dinner "B" ration menus available.

c. Standard "B" Rations. The "B" ration consists of semi-perishable items. There are approximately 100 semi-perishable foods used in the 10-day menu. The ration provides breakfast, lunch, and dinner menus. The components are primarily canned and dehydrated foods and are packaged in bulk containers of various sizes and types. The shelf life varies depending on the item. The food is susceptible to damage from freezing, heating, insects, rodents, humidity, puncture, and breakage.

d. Use Of "B" Rations. The "B" ration is used for feeding in areas where food preparation facilities, without refrigeration, are available. It is also used in situations that do not permit resupply of perishable foods. It is designed to aid substitution of perishable items on a line-item basis.

1. Preparation requirements. Personnel must be properly trained to prepare "B" rations. The "B" ration must be reconstituted according to the procedures printed on or included in each container.

2. Water. To prepare food for 100 persons for one day, you need 64 to 86 (75 average) gallons of water. This includes water for beverages on the menu, but not for refilling canteens or for personal sanitation.

3. Time. Two cooks need approximately two to three hours to prepare a meal for 100 personnel; additional personnel are required for serving and sanitation.

4. Special handling. All dehydrated meat items and certain other food items must be carefully handled during preparation to prevent the product from breaking apart. Fish must be prepared as close as possible to serving times. It is essential to follow the instructions on the can for dehydrated egg mix to ensure proper product consistency and quality. Cheese, applesauce, and cabbage must be handled carefully also.

5. Nutritional data. The “B” ration provides approximately 4300 calories per day (13 percent protein, 33 percent fat and 54 percent carbohydrate).

e. Standard Medical “B” Rations. The standard medical “B” ration is used to subsist staff and patients in medical treatment facilities during organized food service operations when semi-perishable rations are required. For planning purposes, it is assumed that 100 percent of the staff and 77 percent of the total patient strength will subsist on the medical “B” ration when semi-perishables are required. The remaining 23 percent of hospitalized patient strength will require modified diets of liquid medical “B” rations.

1. Medical B-Ration Menus. The standard “B” ration menus, with added food items to satisfy nutritional and dietary requirements, are the basic medical “B” ration menus. Additional medical “B” ration unique items are required for patient feeding. Special subsistence requirements to support the medical “B” ration menus are identified in SB 10-495-1 and are required for medical feeding immediately when hospital units are set up in theater. Tables in SB 10-495-1 have been written to provide separate requirements for 100 patients or staff rations per day.

f. Dental Liquid Ration. The dental liquid ration is designed for military personnel who are unable to eat solid foods due to broken jaws or other maxillofacial injuries. The components are easy to prepare and require no refrigeration prior to reconstitution. The consistency of the mixture can be varied by adjusting the amount of water added.

1. Characteristics. The components in the five-day cycle menu consist of dehydrated food powders. The products, when reconstituted with water, taste like their solid counterparts, but are in a liquid form. Each one is easily sipped through a straw. Milk shakes have also been developed and are used as between meal nourishments. The products are available in single-serving packages or 10-patient meal modules. The shelf life of each product is a minimum of three years at 80 degrees Fahrenheit.

2. Nutritional data. Each menu, including three milk shake nourishments, provides an average of 3500 calories (15 percent protein, 35 percent fat and 50 percent carbohydrate). Each milk shake provides approximately 400 calories.

3. Preparation requirements. Products are hydrated with water and mixed in a blender or whisked into solution if a blender is not available.

g. Unitized Group Ration (UGR). The UGR is designed to simplify and streamline the process of providing high quality group meals in the field by integrating components of the “cook prepared” and “heat & serve” rations with quick prepared and/or ready to use commercial products. This ration has 5 breakfast and 10 lunch/dinner menus. There are three options available, a cook prepared-perishable, cook prepared-shelf stable and a heat and serve comprised of selected tray pack and other ready to use commercial items, thus providing 15 breakfast and 30 lunch/dinner menu options. With the exception of the bread, milk, cold cereal and the perishable items which complement the “cook prepared perishable” option, each menu, including disposable trays/cups/flatware and trash bags, is unitized into three boxes, providing 50 meals. Shelf life is 18 months at 80°F. Each meal, including enhancements, provides an average of 1450 calories (14% protein, 32% fat and 54% carbohydrate.)

h. Meal Module Tray Pack (MMTP)/Tray (“T”) ration. MMTPs are expeditionary rations that are fully prepared, thermally processed, shelf-stable foods developed for use with the Tray Ration Heating System (TRHS). Most MMTP ration items are packaged in rectangular pans; however, some vegetables are packaged in size #10 cans. MMTP ration items include entrees, starches, vegetables and desserts. Like the MRE, they must be supplemented with fresh fruits and vegetables, cereals, breads, beverages, and condiments when they are the sole diet in excess of three days, or at the commander’s discretion based on climatic conditions. MMTP rations are unitized in 18-serving modules, and there are currently 10 breakfast and 10 lunch/dinner MMTP ration menus available. MMTP rations serve as a bridge from the MRE to a more nutritional and acceptable ration, and are not designed to be a replacement for the “B” ration. Long-term sole subsistence on MMTP rations will have the same

affect on physiology and morale as MREs. The ration is designed to have a shelf life of 12 months at 100 degrees Fahrenheit and 36 months at 80 degrees Fahrenheit.

1. **Supplements.** Bread and milk must be available with each MMTP ration meal. Bread may be pouched or fresh. Milk may be fresh, powdered whole milk, or UHT. Two half-pint containers of milk are served for breakfast with cereal and one half-pint container is served for lunch and/or dinner.

2. **Nutritional data.** The breakfast menus, including milk and bread supplements, provide an average of 1400 calories (16 percent protein, 31 percent fat, and 53 percent carbohydrates). The lunch or dinner menus, including bread and milk supplements, provide an average of 1500 calories (17 percent protein, 29 percent fat and 54 percent carbohydrates). The cold weather supplement provides an additional 1200 calories.

i. **Packaged Operational Rations.** Packaged operational rations are prepackaged, pre-cooked foods. They are used under operational conditions when other rations cannot be issued.

1. **Meal, Ready-To-Eat (MRE).** MREs are packaged meals designed for consumption either as individual units for a meal or in multiples of three as a complete day's ration. This ration is used to sustain individuals during operations that preclude organized food service facilities but where resupply is established or planned. When available, bread, fruit, and milk as enhancements to the MRE are recommended. There are currently 12 different menus in each box. The MRE also comes with the RSFH included in each pouch. The ration has a shelf life of three years at 80 degrees Fahrenheit and six months at 100 degrees Fahrenheit. Each meal provides an average of 1300 calories (15 percent protein, 36 percent fat and 49 percent carbohydrates). When supplemented with BSS, an additional 200 calories are provided.

2. **Ration Cold Weather (RCW).** The RCW is specifically designed for cold weather activities. This ration is lighter and smaller than the MRE (based on three MREs versus one RCW). It provides an entree, snacks, hot beverage mixes, and the components do not freeze. The unit of issue for requisitioning and reporting is "ration (RA)". One ration provides a complete daily nutritional requirement of 4500 calories for one individual per day. The RCW is packaged in two plastic pouches with an issue ratio of one ration per individual per day. Currently under development is a Meal, Cold Weather (MCW) that will replace the RCW. This will give commanders the flexibility to provide a mix of MREs, MCWs, or other operational rations, dependent upon the mission.

j. **Enhancements.** Enhancements consist of items such as hot & cold beverages, soups, fresh fruits, and vegetables provided to enhance operational rations. POR enhancements are authorized for MREs, when they are the daily sole diet. The amount authorized per person is limited to 8 percent of the cost of the meal for POR enhancements. For all other operational rations ("B", "T", etc.), the amount is limited to 15 percent. Enhancements are not authorized for RCWs, due to the freezing conditions under which RCWs are issued.

2002. Feeding Standard. On 21 June 1995, The Surgeon General released a revised policy on the use of the MRE as the sole source of subsistence. This revised policy allows MREs to be consumed as the sole source of subsistence for up to 21 days. The Marine Corps field feeding standard is based upon one Meal, Ready-to-Eat (MRE) and two hot meals per day (a heated MRE does not comprise a hot meal). Ideally, breakfast and dinner should be hot meals, while an MRE is provided for the lunch meal. Mission permitting, hot meals will consist of a combination of "A", "B", "T" or UGR rations. "A" ration enhancements/supplements should be added to "B", "T" and UGR ration meals to increase dietary fiber and troop acceptance. Enhancements, as detailed in Chapter 3, are issued when authorized to improve variety and acceptability of all rations. The inclusion of two "A" or "B" ration meals in the standard of three quality meals per day is based on units having the required personnel and equipment necessary for implementation. Commanders should not attempt to feed the "A" or "B" ration meals if sufficient personnel and equipment are not available.

a. The individual meal is best used when the levels of combat are intense or unit activity precludes the use of a prepared group ration. Marines conducting combat operations, (attack, raids, and ambushes) in fighting positions, or widely dispersed at remote sites represent examples of the right time and place for using the individual meal.

b. The group meals (“A”, “B”, “T” or UGR) are best used when units are located in more stable or uncontested regions on the battlefield or area of operations. Group meals can be prepared by the heat and serve method (“T” rations) to full scale raw food preparation using a combination of “B” and “A” ration components. These meals require more time and resources to prepare and depend upon the logistical capability to deliver, prepare and serve all components.

c. Patients in field hospitals will receive three hot medical “B” ration or “A” ration meals daily. MREs are authorized for patients only in emergency situations when other rations are not available. Perishable supplies will be added to the menu as they become available.

d. The hospital staff follows the theater ration policy unless the capability exists to feed those personnel at an improved standard. When supplies and other resources permit, hospital staff will be fed using the patient standard of three hot medical “B” ration or “A” ration meals per day.

CHAPTER 3

MCFFS EQUIPMENT OVERVIEW

3000. Overview. This chapter gives a description of field food service equipment with reference to applicable publications. From individual equipment to group feeding equipment, the MCFFS is capable of supporting any size unit in any scenario.

3001. Individual Ration Heating Devices. There are two individual ration-heating devices available for Marines to heat MRE entree packets or water for instant soups and beverages. These devices are the canteen cup stand and the RSFH.

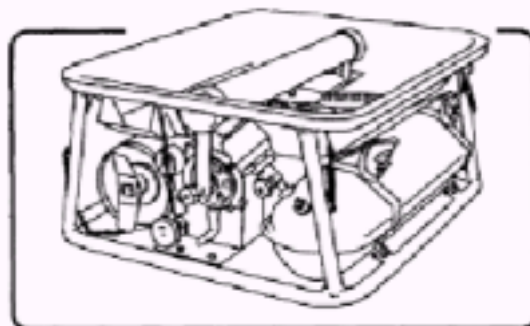
a. Canteen Cup Stand. This is a reusable, lightweight, aluminum stand that fits over the standard canteen cup for travel. The stand allows the soldier to heat his MRE by immersing it in a canteen cup of hot water. The water is heated by the standard fuel bar, trioxane (FBT) heat tablet or, if necessary, any other combustible material. The stand can also be used to heat water for coffee, soup, or hot chocolate.

b. Ration Supplement, Flameless Heater (RSFH). The RSFH is a water-activated, exothermic, chemical heating pad. It is packaged with each MRE to provide Marines a means to heat the main entree items. It is listed in FSC 8900-SL and may also be requisitioned (in bulk pack) separately. See Chapter 6 for storage and handling procedures.

3002. Tray Ration Heating System (TRHS). The TRHS is composed of a Tray Ration Heater (TRH) and associated collateral and support equipment that form a component of the Marine Corps Combat Field Feeding System. When installed on an M998 High-Mobility Multipurpose Wheeled Vehicle (HMMWV), the TRHS is a fully mobile system with heat-on-the move capability to feed 250 hot tray ration meals in remote areas or 500 meals in a ration day with replenishment. The system also supports non-mobile feeding requirements. The purpose of the TRHS is to bridge the gap from the use of MREs to the operational field mess. The TRHS consists of a stainless steel hot-water tank and a multi-fuel, airtronic burner that operates from an external fuel source (5-gallon can). The Airtronic burner will operate for approximately 10 continuous hours on 5 gallons of fuel. A thermodisc maintains a water temperature between 180 F to 200 F. The TRHS will heat 18 tray packs to serving temperature in about 40 minutes. When installed on the HMMWV, the TRHS uses vehicular electrical power. If the TRHS is not HMMWV-mounted, it can be plugged into any 120 VAC, 60 Hz source. It is designed to operate effectively in cold weather down to -25 degrees Fahrenheit however, when operating from 0 to -25 degrees Fahrenheit, special precautions must be taken as described in the TM. The TRHS can be fully installed on a HMMWV without material handling equipment. Easily installed, ratchet-operated tie down straps secure the TRHS as well as the collateral equipment. Each TRHS is equipped with support items including serving tables, serving utensils, insulated beverage containers, side-loading pan carriers and a rain cover kit. The TRHS is capable of providing 500 meals to three or more sites within one day. This requires approximately 28 unitized MMTP modules. The contents of 16 unitized MMTP modules can be loaded into the HMMWV at the beginning of the day, and will require subsequent replenishment. When the HMMWV arrives at the feeding location, serving tables and equipment are deployed and a serving line is established. Hot tray packs are taken from the heater or side-loading pan carriers, opened, and served. Disposable plates and utensils, packaged in the unitized tray ration box, are used to feed cafeteria-style meals. There are currently 10 lunch/dinner and 10 breakfast modules used by the Marine Corps. The use of "A" ration enhancements is recommended whenever possible.

3003. Field Mess Equipment.

a. **M2 Burner Unit.** The M2 burner unit (Figure 3-1) is the heat source for the M59 field range, MKT, and the FSC. The M2 burner unit has a U-shaped tank. For more information and operating instructions on the burner unit, see TM 10-7360-204-13&P. The mess chief must ensure that the cooks operate burner units safely and



in a manner which protects the environment. They must be trained in fire prevention, and they must know what to do if a fire starts.

Figure 3-1. M2 Burner Unit

1. Fire Prevention and Environmental Protection. Ensure that all personnel follow these rules when operating the M2 burner unit:

- (a) Make a firm, level, and well-drained foundation, free of combustible material, for the range.
- (b) Ensure that the burner unit is at least 15 meters (50 feet) from any open flame before filling.
- (c) The gasoline storage area should also be 15 meters from the mess tent or MKT.
- (d) Never pressurize the tank while the flame is burning or when the burner is hot, as escaping gasoline vapors will ignite.
- (e) Wipe up spilled fuel on the burner unit. Vapors from spilled fuel can catch fire or explode if they contact the burner flame or heat from a hot burner.
- (f) Do not permit fuel spills to absorb into the ground. Place contaminated dirt in plastic bags for retrograde and disposal.
- (g) Do not operate the burner unit when the pressure gauge reaches or exceeds 25 pounds per square inch.
- (h) Do not operate a burner unit with a pressure gauge that has not been equipped with the correct safety color code indicator (green 0-25, yellow 25-35, and red 35-60). Do not operate the M2 burner unit with a cracked or broken lens on the air pressure gauge.
- (i) Do not tighten joints while the burner unit is in operation.
- (j) Never put more than one burner unit in the M59 range.

2. Fire Fighting. Ensure that all personnel know what to do if an uncontrolled fire starts while using the M2 burner unit. When an uncontrolled fire starts follow these steps:

- (a) First try to close the flame valve. If you close the flame valve, pull the burner unit from the range cabinet.
- (b) If the flame valve cannot be closed, use a fire extinguisher to put out the fire in the cabinet.
- (c) After the fire is out, remove the burner unit from the kitchen.
- (d) After the unit cools, let out the air pressure from the fuel tank by loosening the fuel tank filler cap.
- (e) **WARNING** Do NOT operate the burner in an unventilated space. Buildup of carbon monoxide gas could lead to INJURY or DEATH.

b. M59 Field Range Outfit and Accessories. The M59 field range outfit is portable and can be adapted to many different cooking configurations. One field range outfit may be used to cook for up to 50 people. Field ranges are grouped together to cook for more than 50 people. Each field range comes with pots, pans, and cooking and serving utensils. One accessory outfit is authorized for every one to four ranges. Figure 3-2 shows the M59 field range. Figure 3-3 shows the accessory kit. For more information on the field range and accessory outfit, see TM 10-7360-204-13&P.

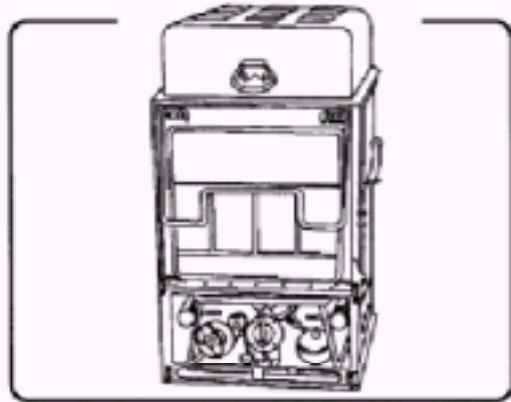


Figure 3-2. M59 field range.

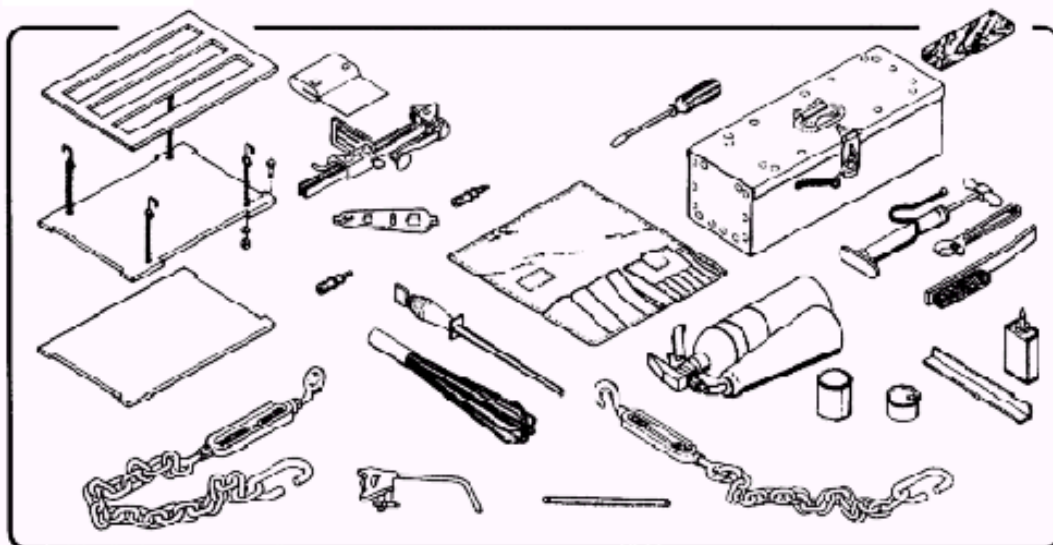


Figure 3-3. M59 field range accessory kit.

1. Using the Field Range. The M59 field range can be used to bake, roast, boil, grill, and deep-fat fry foods by putting the burner unit in the correct position. The range may also be used as a hot line or steam table. The burner unit can be used in either the top or bottom position. Figure 3-4 shows the field range with the burner unit in the top position. When the burner unit is used in the top position, open the slide shutters on the field range cabinet. Figure 3-5 shows the field range with the burner unit in the bottom position. Close the slide shutters on the field range cabinet when the unit is in the bottom position.

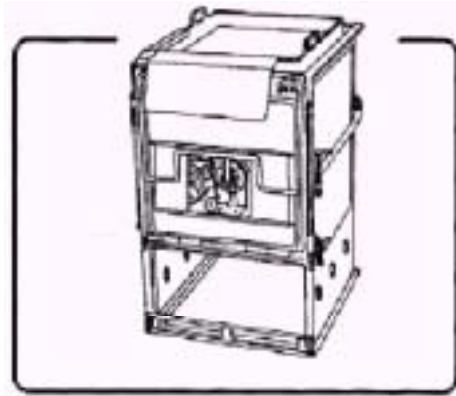


Figure 3-4. Field range with burner in top position.

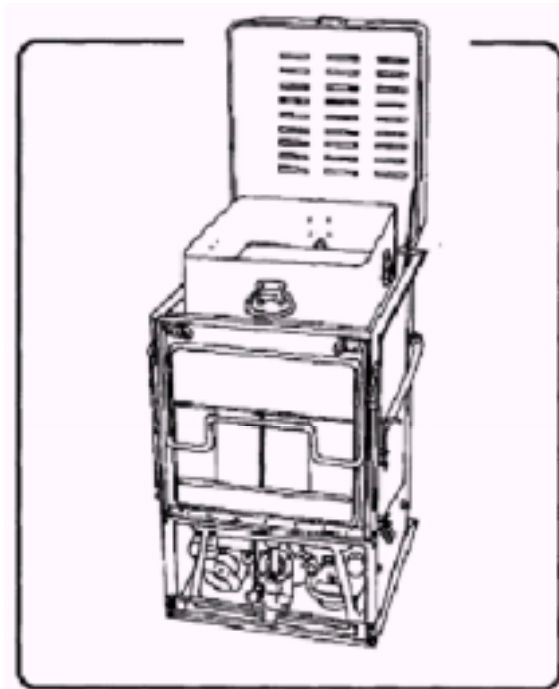


Figure 3-5. Field range with burner in bottom position.

2. **WARNING.** Before placing a burner unit in either position, check to be sure that the other position is empty. Operating a field range with two burner units could lead to **INJURY** or **DEATH**.

c. **Immersion Heaters.** Immersion heaters are used to heat water for clean up operations at the field mess. Two types of immersion heaters are the standard model and the preway model. Figure 3-6 shows what they look like. The models look very much alike, with the main difference being the two column stacks on the heater body.

Operating instructions are on the data plate attached to the burner unit cover. Additionally, TM 5-4540-202-12&P and TM 10-4500-200-13 discuss the immersion heater in detail. The Marine Corps is considering replacing the immersion heater (and mess kit laundry lines) with the deployment of the Field Sanitation Unit (FSU). This conversion will of course depend upon funding.

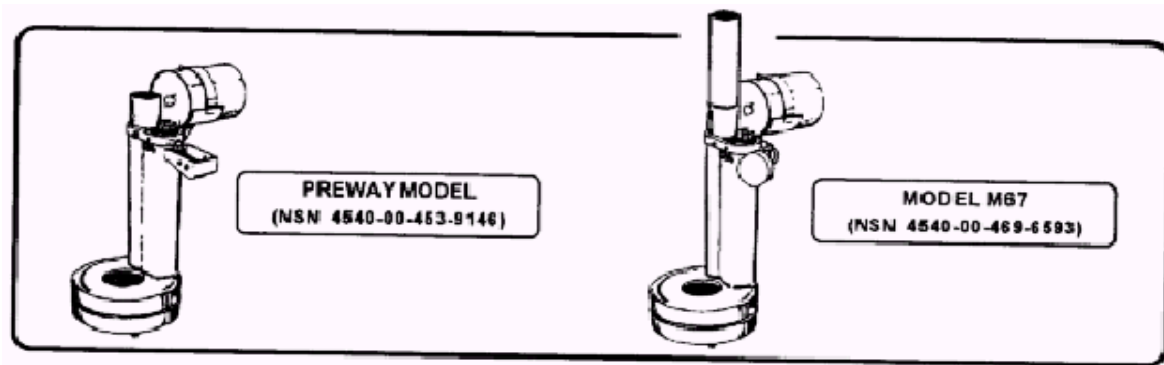


Figure 3-6. Immersion burner.

d. Insulated Food Containers. Insulated food containers (Figure 3-7) are used to keep hot foods hot and cold foods cold. Each container has three aluminum inserts with tight fitting covers. Each insert may be filled to 5 1/3-liters (5 2/3 quart) capacity. Hot and cold food must be stored in separate containers.

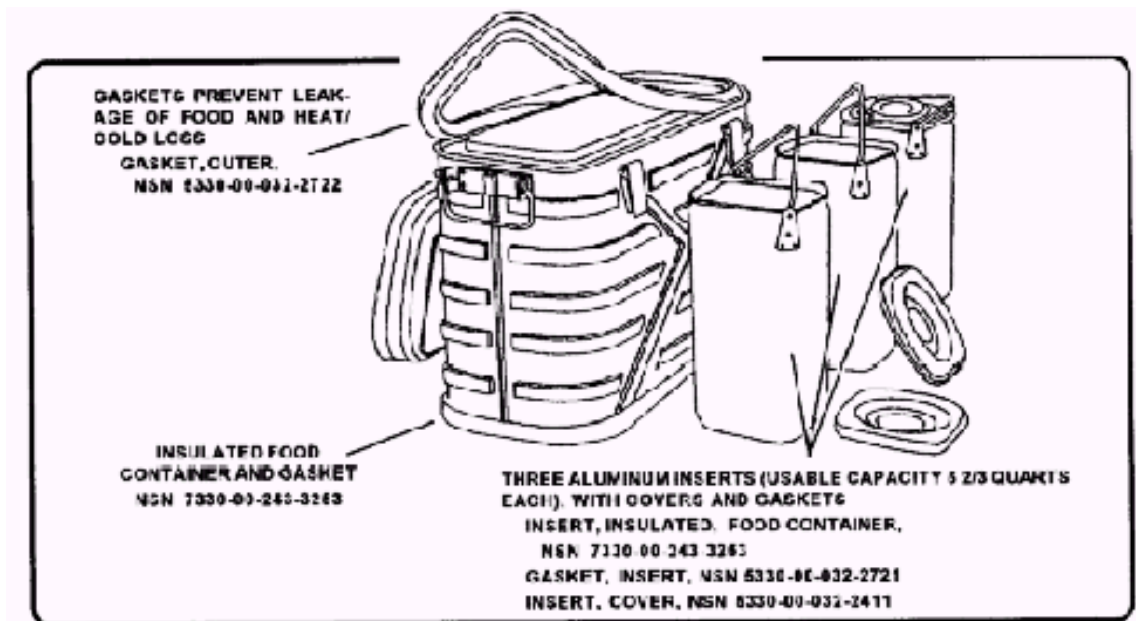


Figure 3-7. Insulated food containers with part NSNs.

1. Heating and filling. A properly heated container will keep food warm for three to five hours. However, NAVMED P5010 states that PHF held in an insulated food container for more than four hours must be discarded. Before you put hot food in the container, heat the container as described:

- (a) Remove the inserts.
- (b) Pour 2 quarts (1.9 liters) of boiling water into the container.

- (c) Replace the inserts.
- (d) Close the container lid and secure the latches diagonally.
- (e) Let stand for at least 30 minutes.
- (f) Open and remove the inserts.
- (g) Pour water from the container.
- (h) Put hot food in the insert and replace the insert cover (with gasket).
- (i) Place the filled inserts in the container.
- (j) Close and fasten the container lid by securing the latches diagonally.

2. Chilling and filling. To chill a container before putting cold food in it you should:

- (a) Remove the inserts.
- (b) Put crushed ice or 2 quarts of ice water in the container.
- (c) Close the container lid and secure the latches.
- (d) Let stand for 30 minutes.
- (e) Pour ice or water from the container.
- (f) Put food in the inserts and fasten the lids.
- (g) Place the filled inserts in the container.
- (i) Close and fasten the container lid by securing the latches diagonally.

3. Labeling containers. Label each food container when filled. Placing a strip of masking tape across the top of the container lid can make a good label. Write the menu item, the number of servings, the date, the time the item was placed in the container, and "Consume by _____ or Discard" (fill in the time 4 hours after the container was filled) on the tape. The NSNs for the labels on the top of the insulated food container are 7690-01-224-6411, 7690-01-220-3274, or 7690-01-223-2521.

4. Transporting food. If the food is to be carried to other sites, use a code letter or color to identify each site. Make sure that each site has a complete menu. Write the menu items, the number of servings, the date and time prepared, "Consume by _____ or Discard", and the site code on each container label. For feeding small units, put separate inserts for meat, a starch, and a vegetable in one insulated food container.

5. Cleaning the container. Clean the insulated food container and the inserts before and after every use. Never immerse the food container in water. Remove the inserts and gaskets and wash them in hot, hand-dishwashing compound solution. Then rinse and sanitize the parts in water at 180 degrees Fahrenheit or greater. After washing the gaskets from the food container, put them back on the container with the flat sides down and let them dry that way. Place the gaskets from the insert covers back on the insert covers and let them dry.

6. Ordering replacement parts. Replacement parts for the insulated food container can be ordered through normal supply channels. Figure 3-7 gives the NSN and nomenclature for each part.

7. Storing the container. Store containers with lids closed but unlatched. Make sure the food container lid is pushed back slightly to allow air to circulate. This will reduce mold or mildew.

e. Dispenser, Liquid, Insulated. The dispenser, liquid, insulated, with spare parts and their NSNs is shown in Figure 3-8. Follow procedures for the insulated food container for its use, care, and maintenance.

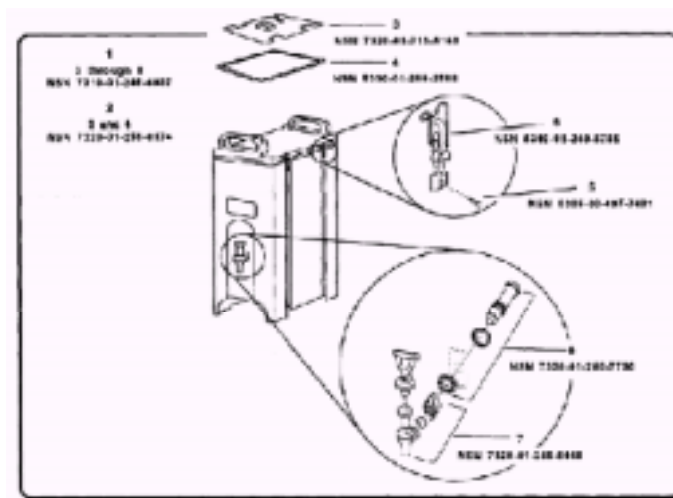
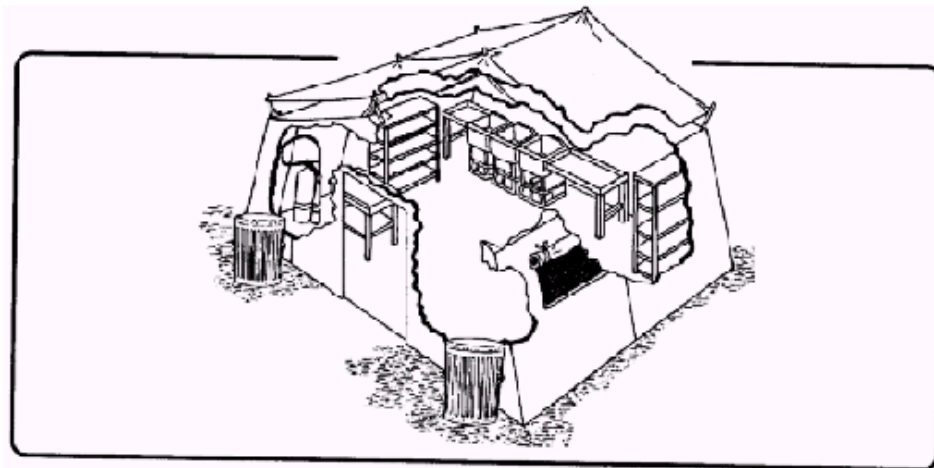


Figure 3-8 Dispenser, Liquid Isolator

3004. Equipment from other Services. Equipment from other services, primarily the Army, is sometimes available for use on a temp-loan basis. An example is the Marine Corps' use of the Army's Mobile Kitchen Trailer



(MKT) in Southwest Asia. Additionally, many units employ a homemade version of the Field Sanitation Center (FSC), rather than use immersion heaters.

Figure 3-9 Field Sanitation Center (FSC)

a. Field Sanitation Center (FSC). The FSC (Figure 3-9) consists of equipment required to clean and sanitize the food service equipment.

1. Equipment. The equipment for the FSC, which includes the TEMPER tent (NSN 7360-01-277-2558), is shown in Figure 3-10. Assemble equipment as described in the following paragraphs.

- Three field sinks and three sink covers
- Two drain tables

- One worktable
- Two storage racks
- Three burner units
- One tent, extendable, modular, utility (16 feet by 20 feet)
- One gasoline lantern
- One 50 foot drain hose assembly
- One fire extinguisher
- Three thermometers for the sink and three brackets for the thermometers
- Two plastic trash barrels
- Two sink immersion racks
- Two sink adapters (to connect sinks at the top)

Figure 3-10 Sanitation Center Equipment

(a) Sink assembly. The sinks come complete with two racks inside each sink (a burner rack for the M2 burner and a rack base). Assemble the sinks as shown in Figures 3-11 and 3-12.

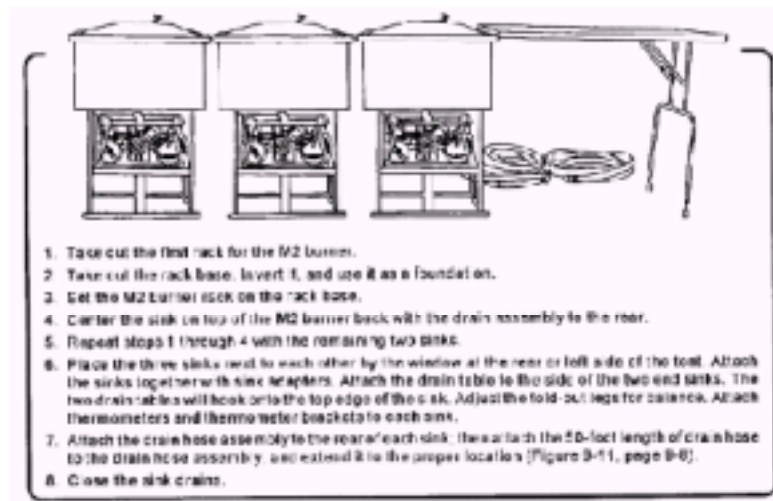


Figure 3-11 Sink Assembly

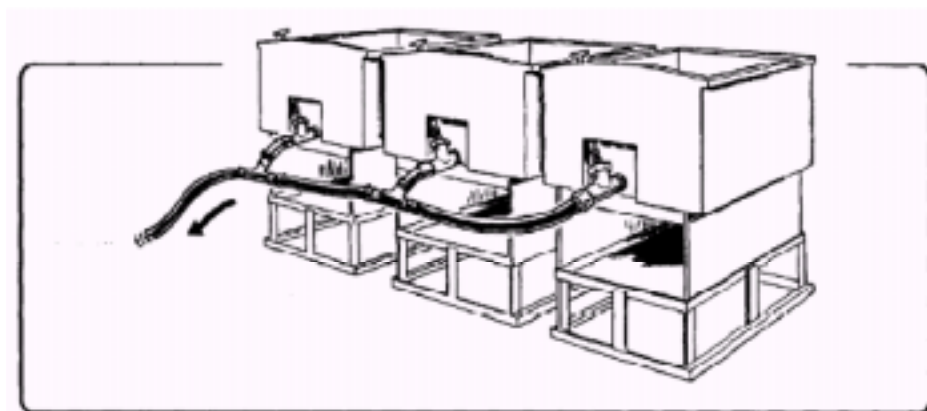
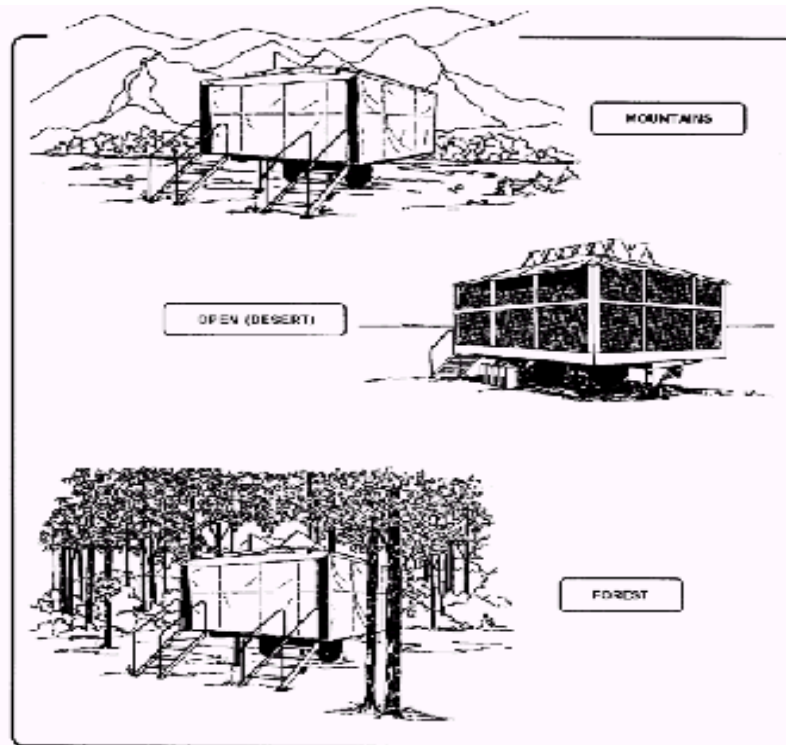


Figure 3-12. Drain hose assembly

- (b) Worktable. Assemble the worktable. Place it in front of the three sinks.
- (c) Storage rack assembly. Assemble the storage rack and place it in a convenient area of the tent.
- (d) Trash cans. Place the two 32-gallon-capacity plastic trashcans just inside or outside of the tent entrance. One can is used for food waste (plate scraping, leftovers, and vegetable culling) and the other is for nonfood waste (cans, bottles, boxes, and paperware).

b. **Mobile Kitchen Trailer (MKT).** The MKT is a complete kitchen unit mounted on a trailer chassis that can be towed by a medium tactical truck (M923 or similar). The MKT is also certified for helicopter external air transport. Currently, there are five models of the MKT in use. They are the MKT-75, MKT-75A, MKT-82, MKT-85, and the MKT-90. The MKT-90 has sling load capability. The components of the MKT, their use, and



maintenance procedures are discussed in Chapter 10 of TM 10-7360-206-23&P.

Figure 3-13 MKT in Various Configurations

1. Configuration. The MKT is covered by a metal roof that can be lowered for storage or transport or raised when food is prepared and served. After the roof has been raised, mosquito netting may be attached to keep insects out. Also, the kitchen has detachable fabric sides to protect troops from inclement weather. Figure 3-13 shows the MKT set up in different environments. Figure 3-14 shows the MKT in its three configurations:

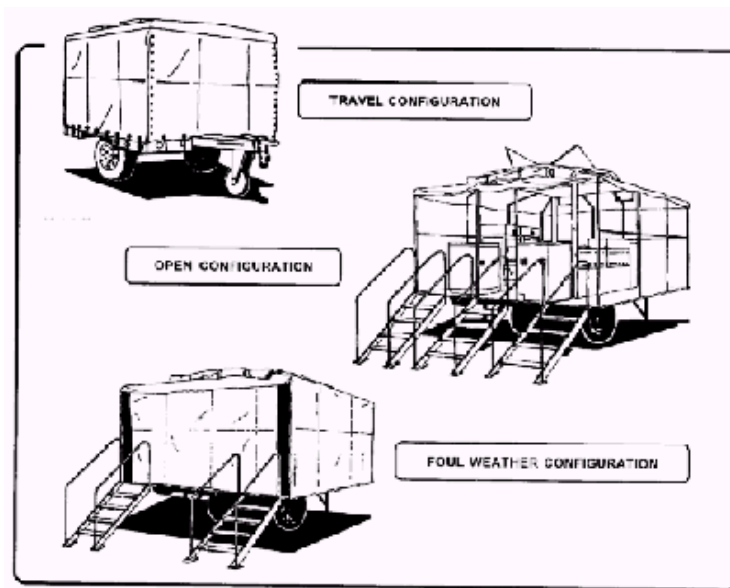


Figure 3-14, MKT Configurations

(a) Meal service. One MKT, can prepare and serve “A”, “B”, “T” ration meals for up to 300 Marines per meal. Two trailers may be hooked up in tandem to prepare and serve up to 700 meals at consolidated field mess sites.

(b) Packing process. After meals have been served, the kitchen can be packed up into the travel mode. The packing process is very important; if not properly packed, the trailer can be permanently damaged. It is imperative to train Marines to pack the MKT according to TM 10-7360-206-13.

(c) Operation during inclement weather. Fabric curtains are provided with the MKT for operating during inclement weather. Follow the steps below to prepare the MKT for operation during cold or inclement weather.

- Partially close air vents to prevent entry of outside elements.
- Remove six fabric curtains from storage.
- Install the longest curtains on the sides and fasten them to the roof fabric flap.
- Install the two smallest curtains on the right side of the roof fabric flap (both ends).
- Install the two remaining curtains.
- Secure the bottom edge of the curtains to the ramps with rope tie-downs.
- Open and close kitchen exits required with Velcro hook-pile tab.
- Secure all ties around the tent poles rails, except at the entrances and exits.

(d) Operation in high winds. Install hold-down ropes from the tent pole tops to the ground for added support.

3005. Future Equipment. A containerized kitchen is being designed to provide a rapidly deployable kitchen equipped to offer fast, efficient, safe, reliable, and quality feeding of forces:

- a. Serves 650-1000 hot meals at least twice a day (manned by 6 food service Marines).
- b. 3 to 1 expandable ISO container (8'H X 8'W X 20'L).

- c. Thermal fluid space heating.
- d. 15 kW generator or shore power capability.
- e. C-130 transportable.
- f. Modular appliance technology central heating.
- g. Portable and fixed water source connections.
- h. Expandable to operational configuration in 1 hour.
- i. Food storage and preparation.
- j. Hot water for cleaning and food rinsing.
- k. Fully equipped for hot meal preparation.

Each unit will be fully equipped and capable to provide meals within 3 to 4 hours (1-hour setup, 2-3 hours preparation). The containerized kitchen will not provide shelter or seating for patrons. Sanitation capabilities (dishwashing) are not proportionate to the feeding capabilities, therefore deployment of the FSU is required at an ratio of 2 FSUs for every containerized kitchen.

CHAPTER 4

DEPLOYMENT PLANNING

4000. Deployment Planning. Deployment planning begins with forecasting requirements. Food service planning in hostile environments must be tailored to support the tactical situation along the entire operational continuum and at the same time maintain a high level of satisfaction for Marines subsisting in the field, in turn, increasing their morale. Commanders, operations officers, logistics personnel, food service officers, and food service technicians must determine the requirements that will satisfy the feeding plan in the deployment planning process. Mission specific requirements must be identified early in the process.

a. Theater activation. Commanders, operations planners, logisticians, and food service officers must determine Class I requirements that will satisfy tactical needs in the deployment planning process. Mission-specific requirements must be identified early in the process. Remember, when a theater is initially activated or if hostilities break out, all components of the Class I distribution system may not be in place. Units may not have the luxury of choosing which ration they will consume. The operations plan and the approved feeding plan will identify when distribution units and equipment will become operational and when the full family of rations will be available for issue. Establishing Class I support in theater would normally be sequenced as follows:

1. Units deploy with a basic load of MRE.
2. The Tray Ration Heater System should be implemented in the feeding plan as soon as possible, and depending on the length of operation, be used as a "bridge" to serving "A", "B" or UGR rations. Morale is a key element for the success of Marines on the battlefield. The sooner a Marine can consume a hot meal, the more successful he will be as a warrior. Thus the key is to make the bridge from MREs / MMTPs to "A" and "B" rations as quickly and expeditiously as possible.
3. Additional factors included in operational planning are environmental protection, water, fuel, ice, waste disposal, subsistence inspections and residuals. Often all of the planning information does not get into the hands of the actual operators, the food service Marines. MarForPacO P10110.2/MarForLantO P10110.2C is an excellent resource guide for food service Marines and supporting command elements in the planning and operating stages of expeditionary feeding.

4001. Host Nation/Contract Feeding. One of the planning factors to consider is host nation feeding. Host nation feeding consists of two categories, Host Nation Support (HNS) and Host Nation Messing (HNM).

a. Host Nation Support (HNS). An HNS agreement may be entered into by the United States government and friendly host nations. There are two types of HNS agreements, wartime and peacetime. Food service HNS consists of selected subsistence items procured from the local economy and prepared by Marine Corps food service personnel. Generally, items consist of produce, milk, bread, and meat that are used to augment/enhance a "B", "T" or UGR ration menu. If a unit anticipates the need for HNS it must notify the appropriate headquarters to ensure that a current agreement is in effect. The applicable HNS agreement letter that specifies support and reimbursement must be submitted with the unit's Quarterly Subsistence Financial Report (QSFR). The unit receiving HNS must ensure all billing documents are retrieved **prior** to departing the host nation. All subsistence provided by a host nation must be inspected by U.S. Army Veterinary personnel.

b. Host Nation Messing (HNM). HNM involves Marine Corps personnel subsisting in a host nation facility in which the Marine Corps will reimburse the host nation for the meals provided. HNM differs from HNS in that the Marines actually receive full messing support in a foreign military or civilian dining establishment, and in most cases no food service Marines or attendants are needed. Units requiring HNM must identify the requirement 90 days prior to the support being provided. Procedures necessary for obtaining billing documents must be coordinated with the host nation early in the planning process to ensure that all paperwork is compiled in a timely manner at the end of the operation or exercise.

c. Contract Feeding (CF). At times, units will operate in areas where a civilian contractor provides meals. This method of feeding Marines should be used only when all efforts to obtain subsistence support from other

military/host nation sources have been exhausted. An authorized U.S. Federal contracting agent, usually at a military installation or embassy nearest the feeding site must negotiate contract-feeding requirements. All non-food costs incurred by the contractor (labor, equipment, materials, etc.) must be paid for with unit O&MMC funds, thus this type of feeding is the least desirable. It is the responsibility of the subsisting unit to collect all accounting data pertaining to the subsistence operation prior to departing the area of operation.

4002. Unit Preparation.

a. Manpower requirements. Actual staffing of food service Marines and attendants is related to the type of operation, feeding plan, and ration established. There is presently no current directive that dictates required ratios of food service Marines and attendants per personnel fed. Ratios that have generally been supported are as follows:

1. Field Feeding Operations:

(a) Food service Marines - 1 per 50-75 personnel to be fed, in addition to two SNCOs (mess manager and assistant) and three 3361s (core management staff required for prototypal exercises.)

(b) Mess Attendants - 1 per 25 personnel to be fed.

2. Tray Ration Heater Operations: 3 food service Marines, and one driver per tray ration heater.

3. Shipboard Feeding: The Navy generally requires 1 food service Marine per every 50 Marines aboard ship. The amount of mess attendants can vary from 1:25 to 1:50, depending on the ratio of ship's company to embarked Marines.

4. The above ratios should be adhered to as closely as the mission allows. Exercise caution when any decrease in support personnel is implemented, as this will increase the workload and may have an adverse affect on supporting the Marine in the field.

b. Equipment requirements. Equipment requirements are largely determined by the amount of personnel supported:

<u>NOMENCLATURE</u>	<u>EQUIPMENT</u>	<u>RATIO PERSONNEL</u>
FOOD CONTAINERS	1 EA	25
RANGE OUTFITS w/ M-2	1 EA	50
ACCESSORY OUTFITS	1 EA (per 2 range outfits)	
VACUUM JUGS (3 GAL)	1 EA	25*
CONTAINER, BEVERAGE, 5 GAL	1 EA	25
TENTS G/P MEDIUM	4 EA	500
ERU 4-E W/ 350 CUFT REFRIGERATOR	2 EA	500
WATER TRAILER, 400 GAL	1 EA	250
GENERATOR MEP-3 (24 hr operation)	2 EA	1500
TRHS	1 EA	250

The repair or replacement of T/E gear (class IX) is determined by the age of the equipment, hours of operation, handling during transportation, and how well the maintenance program has been performed. The below list contains the life expectancy of field equipment:

<u>TYPE OF EQUIPMENT</u>	<u>AVERAGE LIFE EXPECTANCY</u>
M-59 Range Cabinet	Indefinite life
M-2A Burner	10 years
Generator for M-2A	450-500 operating hours
Immersion Water Heater	10 years
Food Container	5 years
Vacuum Jug*	5 years

* Currently all 3 gallon Vacuum Jugs are being replaced on a 2 (Vacuum Jugs) for 1(5 Gallon Cambro Beverage container).

c. Fuel requirements.

<u>Nomenclature</u>	<u>Capacity</u>	<u>Time</u>	<u>Primary Fuel</u>	<u>Alternative Fuel*</u>
M-2 Burner	2 GL	4 hrs	Gasoline	
Tray Ration Heater	5 GL	10 hrs	Diesel	DF-1, DF-2, DFA, JP-8, Kerosene

**The use of alternative fuels will usually result in increased lighting difficulties, decreased efficiency, more frequent adjustments to the fuel flow rate, increased smoke output and shorter intervals between scheduled cleaning.*

1. Determining the amount of fuel: (Example: Feeding 700 Marines for seven days; two "B" ration meals and one "T" ration meal per day).

- M-2 Burner: 1 per 50 troops --- 700 Marines divided by 50 = 14 M-2 burners. 14 M-2 burners x 2 gals. = 28 gals per meal --- 28 gals x 14 meals = 392 gals.
- TRHS: 700 divided by 250 troops (per 90 minutes) = 2.8 x 90 = 252 minutes. 252 minutes divided 60 = 4.2 hours --- 4.2 hours x 7 meals = 29.4 hours (30). 5 gals of fuel will burn continuously for approximately 10 hours. 30 divided 10 = 3 (5 gal cans of fuel) or 15 gals*

**The 15 gallons of fuel will support 30 hours of continuous burning. The TRHS will automatically shut off and turn on when the switch is placed on automatic, allowing for more than 10 hours of use. The estimated 90 minutes per 250 servings is based on using multiple feeding sites.*

d. Class IX requirements. Unless directed by message or the letter of instruction (LOI) to keep a specified amount of Class IX on hand for a pre-expendable bin (PEB), a general rule of thumb is to compute 10% of the above mentioned items for every 30 days of operation. Although this is a rule of thumb, special consideration must be given to the type of environment the equipment will be operating in. Listed below are items requiring consideration for the PEB:

<u>TYPE OF EQUIPMENT</u>	<u>CLASS IX</u>
Immersion water heater	Wicks and retaining rings
Food containers	Container gaskets

	Insert gaskets
Ranges / M-2A burners	Generators
	Preheaters
	Air input valves
	Drain plugs
	Retaining springs
	Air pressure gauges
Accessory Outfits	Air pumps
Vacuum Jugs	Cover gaskets
	Faucet assemblies/gaskets

e. Water requirements. The information below is provided for consideration when computing water requirements to support a field mess operation:

1. The water capacity of the TRHS when empty is 30 gallons. When tray packs are inside the TRHS, the approximate amount of water required for proper heating is 10 gals.

2. When using the unitized "B" ration, an average of 75 gallons of water per day is required to prepare food and beverages for 100 people.

f. Security. Procedures for securing subsistence, supplies, funds, and equipment must be established in advance. Include requirements for special items such as concertina wire or locks. Discuss duties of guard personnel patrolling subsistence and supply stocks.

g. Records and logs. Food service personnel should maintain records and logs that reflect unit activities that may impact future missions. Records of training, equipment (maintenance and replacement), ration accounting, personnel supported (feeder unit versus one being subsisted by another), and problems encountered and solutions used should be recorded.

h. Equipment status. Do not wait until notified of an operation or deployment to determine the status of equipment. Order all required replacement parts and equipment as the need is identified. When funds are not available, prepare a list of requirements and maintain completed requisitions ready for immediate submission when the unit is notified of fund availability or impending deployment.

i. Training. Personnel must be trained to operate effectively within the MCFFS. Training should be aimed at the individual's job requirements, level of responsibility, and team building. Training should include a working knowledge of the operation and maintenance of T/E equipment, subsistence requisitioning, receipt and storage of subsistence, accountability, issue and distribution procedures, safe food handling, preparation and serving, environmental stewardship responsibilities, sanitation procedures, and retro-grade operations.

4003. Supply Levels.

a. Push System. A push system is used to initially fill the supply pipeline during conflict. During limited duration or high-intensity conflict, the push system may be used exclusively without conversion to the pull system. Under a push system, the MMC and/or the planning cell determine the type and quantities of rations to be shipped to each Class I supply point. Types and quantities of rations ordered and shipped under the push system are based on anticipated troop strength, unit locations, type of operation, and feeding capabilities. A push system ensures that rations are available in the operations area. However, a sufficient quantity of the type rations desired may not be in the right supply point to support units and units have limited control over the type of rations sent to them.

b. Pull System. MCFFS policies and procedures are based on a pull system. A pull system has the lowest user element (field kitchen) placing a demand on the Class I supply system that is processed through the supply

system. Then subsistence is sent forward to satisfy the request from the field kitchen. A pull system provides tighter control of available subsistence, while being responsive to the user. The pull system, however, may require longer lead times for ordering.

c. Distribution variances. The actual Class I distribution system may differ from one unit's mission or deployment to another. Factors to consider include Class I supply point locations, issue schedules, method of distribution (unit or item pile), and Class I issue times (day or night). Specifics of the Class I distribution system for deployment planning are also available from various unit documents, such as the CSS annex of the OPORD, or letters of instruction (LOIs) and directives.

4004. Other Planning Requirements. Additional factors to be included in operations planning are environmental protection, water, fuel, ice, waste disposal, subsistence inspections and residuals (leftover usable food items). The following are areas requiring specific attention.

a. Location. Site selection and grid coordinates for the water, fuel, ice, trash, and RBPs points require attention. Fuel, water, and ice should be located near the Class I point to expedite resupply of supported units.

b. Disposal. Disposition of residuals also must be an integral part of the deployment planning process. Knowing the disposition instructions of usable food items not issued is especially crucial in overseas deployments. Residuals that can or cannot be turned in to the supply point must be identified and specific disposition plans established. In addition, guidance for trash disposal must be provided to participants. Chapter 8 provides trash management details.

c. Ice. The planning factor for potable ice is based on six pounds per Marine per day in a temperate climate and 11 pounds per Marine per day in an arid climate. Food service officers can adjust figures to suit the exercise or deployment based on actual unit demands.

CHAPTER 5

DEPLOYMENT

5000. Techniques. Food service support is an essential part of any unit deployment. Commanders should ensure that deployment plans specify the earliest possible movement of personnel, equipment, and basic loads of rations. The deployment of the theater subsistence distribution activities and subsistence platoons should begin at the onset of theater operations. These personnel, their equipment and transportation assets should be in place to receive and forward the subsistence required to sustain the force. Their locations should be planned and coordinated for compatibility with the overall layout of the theater distribution system. The food service officer and unit mess chiefs should advise commanders (at each level) of any special requirements during initial planning phases. The MCFFS permits food service operations in a variety of tactical situations, yet they must be curtailed in NBC environments. Specific deployment procedures discussed in this chapter are:

- a. Unit movement to the deployment site.
- b. Site selection (subsistence supply and field mess) and layouts.
- c. Field feeding procedures including feeding doctrine.
- d. Remote site feeding.
- e. Accountability for rations in the field.
- f. Subsistence storage at field mess sites.
- g. Cold weather field feeding.
- h. Hot weather field feeding.
- i. Camouflage.

5001. Unit Movement. Food service personnel may be required to serve meals or warming and cooling beverages for convoy rest halts, railheads, and alert holding areas. Planners should ensure that appropriate food service assets accompany the unit and are on hand at the reception site.

5002. Class I Site Selection. Each class I point must be accessible to its supply sources and customer units. Depending on METT-T factors (mission, enemy, terrain and weather, troops and support available and time), class I distribution points may be co-located with water points. Select an area with good drainage and cover near the main supply route. Make use of any permanent buildings. Roads should be able to handle heavy traffic in a variety of weather conditions and be wide enough for the supply vehicles. The ground where rations are positioned must be able to support their weight. Erect directional signs inside class I points to avoid traffic congestion and accidents.

a. **Size.** The site should be large enough to handle the estimated volume of class I supplies and equipment. A parking area is needed for vehicles stopping at the checkpoint, loading and unloading supplies, bringing in and taking out refrigerated trailers, and MHE working the stacks. Class I sites must be large enough to afford some dispersion of supplies to lessen the chance of enemy destruction. Use dunnage to keep the supplies off the ground and tents and tarpaulins to provide protection buildings are not available. Ensure lighting is adequate for safety and security. Fence the perimeter and establish checkpoints at each exit and entrance, Figure 5-1 shows the suggested layout for a rear area class I supply point. Figure 5-2 shows the suggested layout for a forward area class I supply point.

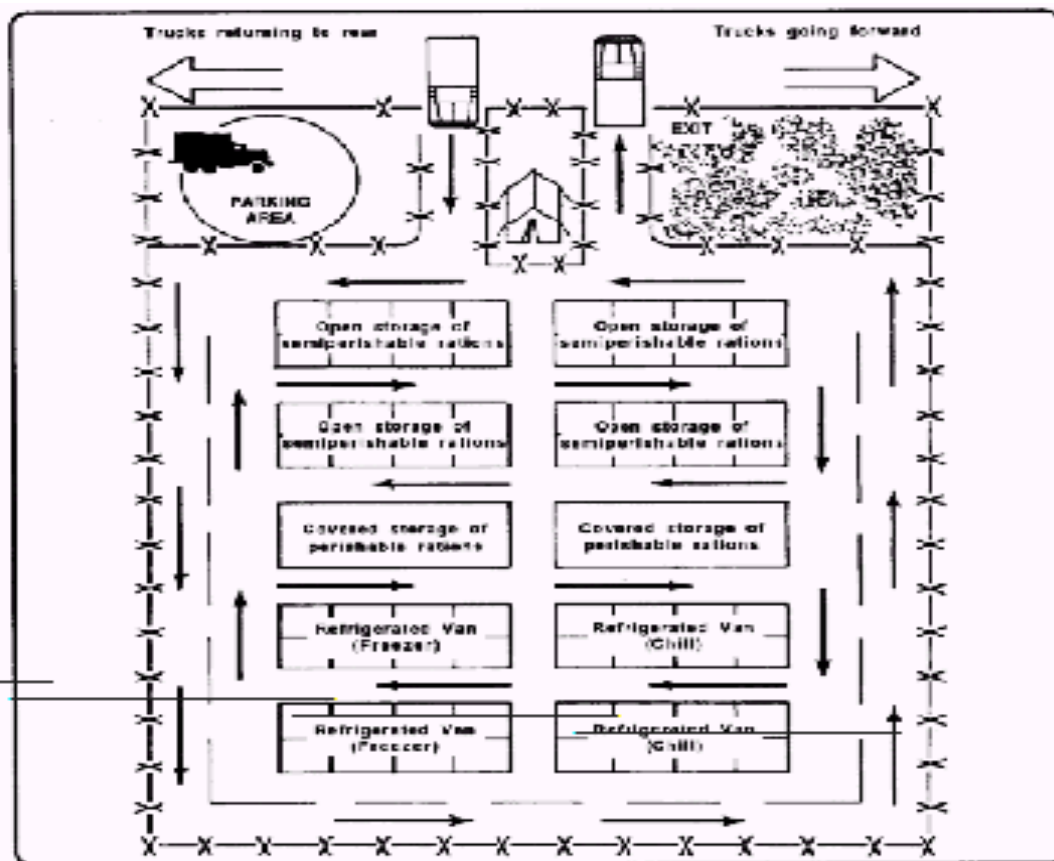


Figure 5-1. Rear Area Class I Supply Point

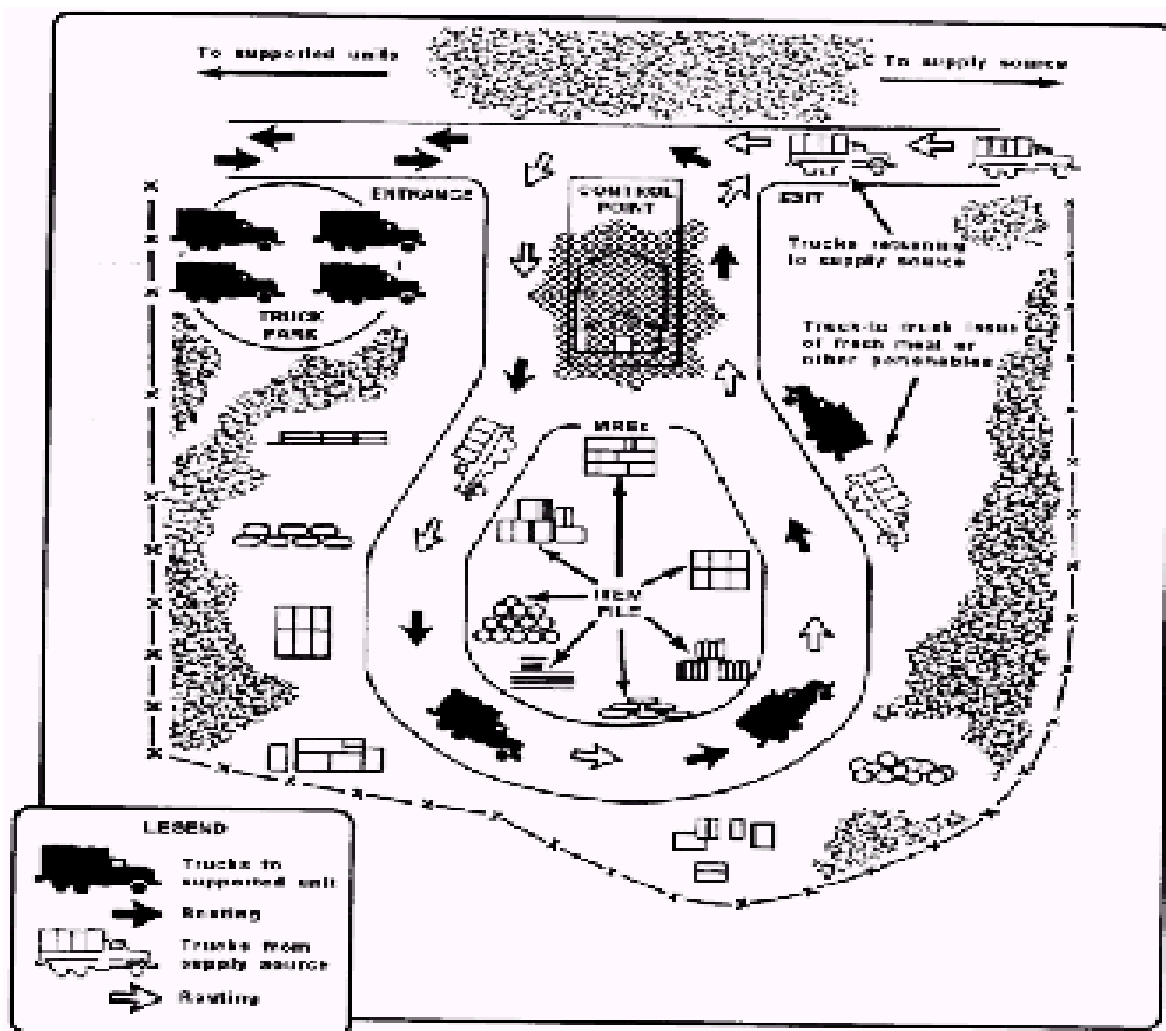


Figure 5-2. Forward Area Class I Supply Point

b. **Concealment and cover.** Because of the large amounts of supplies stored at a class I point, it is extremely difficult to camouflage or conceal all of the subsistence. If trees are available, place the palletized rations under them. All trucks and MHE should be camouflaged with netting. When possible, terrain features should be used to protect the class I point from enemy fire.

c. **Defense.** When feasible, use three-strand concertina wire to define the site's perimeter. Interlace the concertina wire with sensors, trip flares, and antipersonnel mines to provide early warning of the enemy's approach. Have security patrols check the condition of the perimeter daily. Include fighting positions as part of the unit's overall defensive plan. Enforce light and noise discipline as required by METT-T.

5003. Field Mess Site Selection. The unit commander or his representative specifies the general location of the field kitchen site. However, the mess chief must consider the characteristics of a good field site, as shown in Table 5-1.

CHARACTERISTIC	IMPORTANCE
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Good natural cover	Shields troops from the enemy and protects them from sun, heat, and cold winds.
Good access roads	Lets supply trucks move freely.
High and dry ground near a protected slope	Ensures good drainage and protection from the wind.
Enough space	Eliminates crowding of the troops and facilitates spreading out the equipment so that personnel can work efficiently.
Near source of potable water	Used in preparation of foods and beverages.
Sandy loam or gravelly soil	Lets excess water seep away and helps soakage pits and trenches work well.

Table 5-1. Characteristics of a good field mess site

The following should also be considered in selecting and setting up the field kitchen:

- a. Tactical or non-tactical operation.
- b. Extent of time area will be occupied.
- c. Use of individual or single service disposable eating flatware.
- d. Method of solid waste disposal (burn, bury, back-haul).
- e. Resupply operations. Roadways and their accessibility.
- f. Use of tents or buildings.
- g. Location of billeting area.
- h. Available equipment and space for proper arrangement.
- i. Natural cover to shield from the enemy and protect from the elements.
- j. High, dry ground near a protected slope for better drainage and protection the elements.
- k. Convenient water source for purification when needed.
- l. Sandy loam or graveled soil to allow excess to seep into ground to enable soakage pits and trenches to work correctly.
- m. Location away from latrines or any source of contaminants.

5004. Field Mess Site Layout. Figures 5-3 and 5-4 suggest placement of the different facilities required to operate a rear area field mess. The field mess area should be camouflaged to hinder detection by enemy aircraft, ground forces, or infrared sensors. Passive measures should include dispersion, camouflage, cover and concealment, light and noise discipline survivability moves, covering vehicle tracks into the field kitchen site, and staggering ration distribution to eliminate congestion of the site.

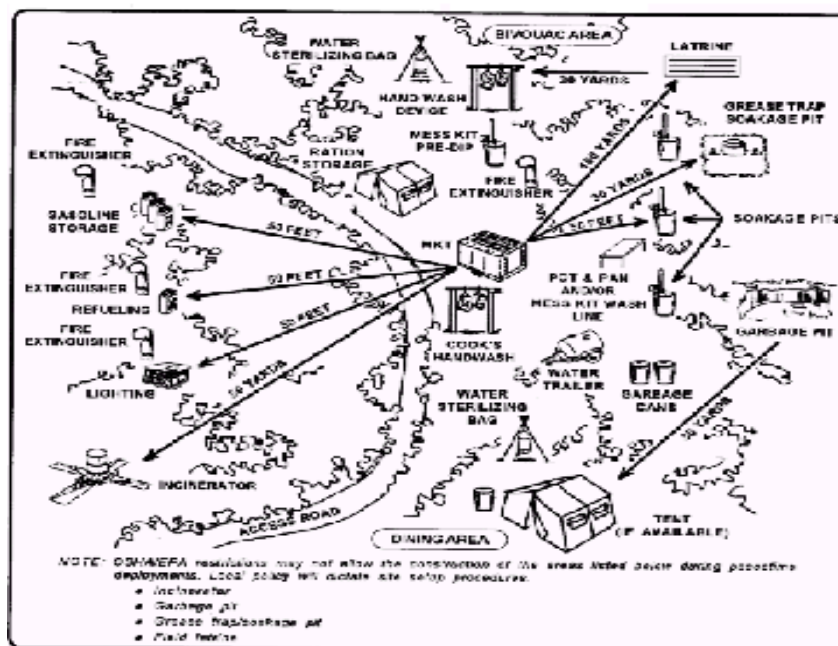


Figure 5-3. Recommended field mess site layout with the pot and pan laundry line.

5005. Field Feeding Procedures. There are two types of field messes:

Temporary site. The temporary site should be close to the forward units and operate for short durations (24 hrs).

Semi-permanent site. The semi-permanent site would be set up in the rear area and could be there indefinitely.

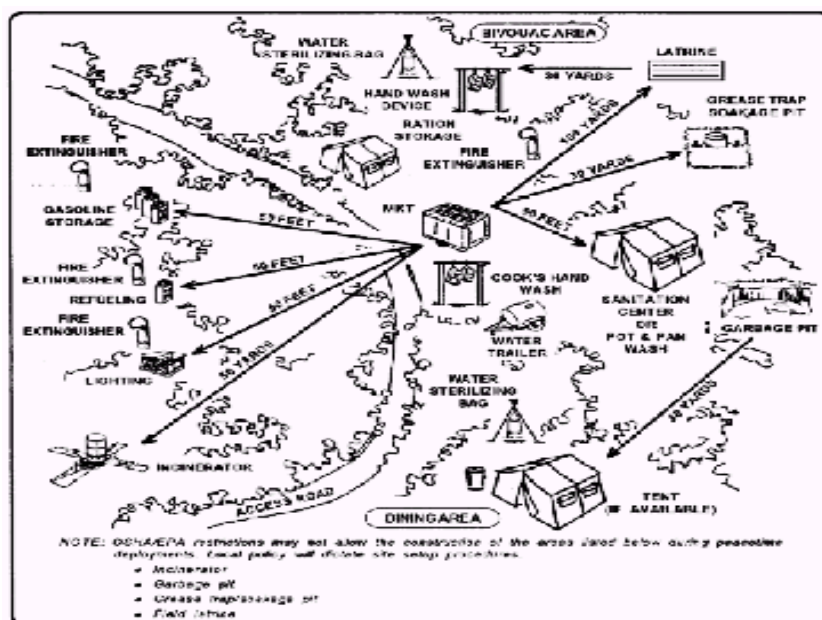


Figure 5-4. Recommended field mess site layout with the sanitation center.

Field feeding procedures are determined by the availability of equipment and personnel, capability of the logistics system, level of commitment, availability of rations and total sanitation requirements. Other considerations are the number of personnel to be fed, feeding times, location and mission. Each field mess can be tailored to meet the requirements unique to each using unit. For example, some units may not require rapid mobility, therefore a semi-permanent site may be established near troop concentrations to support that unit, and use insulated food containers to transport hot food to nearby units that require a larger degree of mobility. Another option for units requiring high mobility is the use of the temporary field mess and/or TRHS. The use of the temporary field mess is recommended for its ability to have a favorable impact on morale. Although more logistically cumbersome than the TRHS, the palatability and variety of meals is more desirable. The use of the temporary field mess in conjunction with the TRHS is another option for expeditious feeding. Properly coordinated, the systems complement one other by offering the commander a means of preparing a meal while on the move, and the ability to offer a more acceptable meal when the opportunity arises. The sole use of the TRHS is another option for the commander. However, its use must be limited to short periods of time for smaller units with a highly mobile mission. Long term sole subsistence on "T" rations will have the same affect on physiology and morale as MREs.

Consolidated (Area) Feeding. Feeder units provide support to units in or passing through their area. Units with no authorized food service personnel are attached to a feeder unit for subsistence support. These supporting units also prepare and transport meals to remote sites when required. Food service personnel should be responsible for the transportation, setup, and feeding of units away from the field mess. Proper sanitation and ensuring that all personnel receive proper portions are examples of why food service personnel should accompany meals sent to remote sites. Remote site feeding requires intensive management by commanders and food service personnel. Remote feeding may be accomplished by various methods. Units may send hot meals forward to remote sites using insulated food containers. When practical, the TRHS may be deployed to remote sites for hot meal preparation. Three food service Marines should accompany this equipment forward to remote units for hot meal preparation. When staging prepared subsistence, dunnage should be used and the area should be covered when possible. Staging can be by unit, by meal, or by item. Whichever method is used, the staging area must be supervised by a food service Marine to ensure that units receive the proper amount of rations and instructions in sanitation and serving.

5006. MCFFS Accountability.

a. Receipt. Receipts must be obtained from approved local vendors or the ration issue point when rations are received. When receiving rations, food service personnel should conduct a quality and quantity inspection at the

time of receipt to determine the condition of cans and packing materials and verify the quantities received by signing and dating the forms provided. They should keep a copy of all receipts for proper accounting and reconciliation.

b. Inventory. A daily running inventory of subsistence items on hand in the field mess must be maintained. This inventory can be kept using manual or approved automated methods.

c. Reconciliation. When supported by the U.S. Army, a financial record is maintained by the Troop Issue Subsistence Activity (TISA). Unit commanders will ensure field mess financial records are reconciled on a regular basis, and prior to departing. If the TISA is automated, an account update is provided to the field mess on a scheduled cycle. A copy of the final document will be included in the unit's Subsistence Operational Analysis Report (SOAR). Maintain all invoices, reconcile all transactions for price changes and quantity received prior to closing the operation.

d. Accounting.

1. Subsistence accounting must be performed in a manner that subsistence supplies are received, stored, and issued to the using units efficiently. In order to give subsistence management personnel sufficient data to properly manage subsistence supplies, they use management control forms such as:

(a) Subsistence Issue Receipts.

(b) Stock Record and Inventory Control Cards

(c) Inventory, requisition and issue forms.

(d) Daily cost analysis.

(e) Financial status.

2. Subsistence accounting is closely monitored and frequently audited by DOD agencies due to the large monetary value associated with subsistence supplies. Therefore, all subsistence accounting must be kept as accurate and up-to-date as possible. During wartime, the method for accounting is combat accountability. During peacetime, the prescribed method of accounting is accomplished by the SOAR or the Subsistence Report. A Quarterly Subsistence Financial Report (QSFR) for field exercises will be submitted to the CMC (LFS-4).

(a) A SOAR will be prepared for each operation where a field mess is implemented. The original SOAR will be submitted, via the appropriate chain of command, to the appropriate headquarters not later than 15 days following the end of the operation. A duplicate copy of the SOAR, with all supporting documents, also will be retained by the reporting activity for 2 years for audit purposes. The original SOAR will consist of the below listed supporting documents arranged in the order presented:

- SOAR
- Consolidated Man-Day Fed Report (NAVMC 565-1).
- Voucher for Disbursement and/or Collections (NAVCOMPT 2277)
- Applicable Host Nation Support/Messing billing documents.
- Copies of Invitational Travel Orders for foreign military personnel (if applicable).
- Applicable Inter/Intra-service Support Agreements (ISSA), or Memorandums of Understanding (MOU).

(b) A Subsistence Report is used in those situations when a field mess is not established. However, documentation for expenditure of MPMC subsistence funds is necessary.

(c) The QSFR is used to provide accurate accounting of PORs and MPMC subsistence funding to HQMC (LFS-4). This report also provides historic data and justification for budget submissions, as required by higher headquarters, as well as detailed documentation of budget execution to the Fiscal Division, HQMC (RFC). The QSFR is to be submitted 15 days after the end of the accounting period/exercise.

(d) Combat Accountability is a modification to normal operating accounting and reporting procedures and is used primarily during time of war. At such time as the Commandant of the Marine Corps authorizes combat accountability, the Force Commander may suspend formal accounting for Class I supplies. Specific guidance will be published accordingly; however, a monthly Combat Accountability Subsistence Report, with the type and value of the food items received and the number of personnel fed by category, will be compiled by the using unit and forwarded to higher headquarters.

5007. Subsistence Storage at Field Kitchens. Subsistence storage actually begins with transporting rations. Requirements for vehicles used to transport rations are explained in the sanitation section of this manual and in more detail in NAVMED P5010, chapter 9. Improper storage causes loss from rodent or insect infestation or from deterioration because of excessive heat or moisture.

a. Transportation. Vehicles used to transport subsistence should be clean, free of moisture, and have pallets to keep subsistence off the bed of the truck. The front and rear flaps must be lowered and secured during transport. Subsistence vehicles are not to be used to transport garbage or petroleum products while transporting subsistence. The bed of the truck should be free of harmful protrusions such as nails that could puncture food containers. Ice chests or other insulated containers should be used to transport perishables when time, distance and outside temperature could cause the temperature to rise above required safe levels for refrigerated items and frozen items.

b. Storage. Class I supplies are best kept under covered storage. However, in the field you will have a rapid turnover, eliminating many of your long-term storage needs. Store supplies so that those with the oldest date of pack are issued first. To reduce the possibility of enemy destruction, store and disperse perishable and semi-perishable subsistence at separate locations.

1. Perishable storage. The temperature for storing frozen subsistence should not exceed 0 degrees Fahrenheit. During transportation, the temperature should not exceed 10 degrees Fahrenheit. Ice cream products should be stored at -10 degrees Fahrenheit and should not exceed 0 degrees Fahrenheit. Chilled items should be stored at 34 to 40 degrees Fahrenheit. Each storage (mobile or fixed) container should be equipped with a thermometer that must be checked frequently and recorded. Factors affecting a refrigerator's ability to properly function are humidity and air circulation. A high level of humidity can cause moisture to condense on an item and be absorbed. Very low humidity allows items to dry out. Restricted air circulation can result in uneven cooling and increase the possibility of spoilage.

2. Semi-perishable storage. Properly storing and protecting semi-perishables ensures that they are tasty and safe for consumption during their shelf life and possibly beyond. After veterinary personnel inspect a product, its shelf life may be extended. Do not stack items so high that boxes and their contents are damaged. Do not place items directly on the deck. Bagged items should not be stored in corners and no subsistence should be stored directly against bulkheads. MRE cases may be stacked up to four pallets high. For dry or low moisture semi-perishable items, freezing temperatures do little or no damage. However, freezing may cause damage to the packaging of water content items. Metal cans are not generally engineered for freezing. Storage life of semi-perishable rations is extended by lower temperature storage (from 50 degrees Fahrenheit to as low as 32 degrees Fahrenheit). Frozen storage is not recommended. High storage temperatures encourage the growth of bacteria and molds, promote insect infestation, and shorten the approximate storage life of semi perishable items. The serviceable storage life of MREs decreases as storage temperatures increase. MMTP rations have been designed to have a minimum shelf life of three years when stored at 80 degrees Fahrenheit or six months at 100 degrees Fahrenheit. Do not cover UHT milk and/or other subsistence with black plastic in a field environment. Black plastic intensifies temperatures and causes rapid deterioration of subsistence. MREs that become frozen during exercises should be kept frozen until issued for immediate consumption. If frozen MREs are returned to storage and

thawed, they must be segregated and marked with a placard stating “HOLD-PREVIOUSLY FROZEN, RETURNED TO HEATED STORAGE ON (DATE), CLEARED FOR ISSUE (DATE-minimum of 30 days after returned to heated storage)”. Stationary MRE pouches may be frozen a number of times without damage to the pouch. The product quality will deteriorate slightly with each freeze/thaw cycle, but the food will remain wholesome as long as the pouch is not damaged. The MRE should not be cycled through more than five freeze/thaw cycles.

5008. Cold-Weather Field Feeding. When preparing meals in cold weather conditions (32 degrees Fahrenheit or below), preventive maintenance and adequate deployment testing of all equipment is critical and must not be neglected. The failure rate of equipment increases in extreme cold environments, causing a need for more repair parts. Food service Marines require additional time and assistance in preparing rations and performing other tasks in extreme cold weather environments. This time requirement cannot be over emphasized and must be included in all planning. At temperatures below -20 degrees Fahrenheit, maintenance requires up to five times the normal amount of time. Daylight is also limited in extreme cold weather climates. Marines are authorized 4500 calories per day in extreme cold weather. Ensure menus are designed to allow for the increased calories. When using the RCW, the issue will consist of one RCW and six trioxane compressed fuel bars per person per day or four MREs and eight fuel bars per person per day. Either POR provides the 4500 calories necessary.

5009. Hot Weather Field Feeding. With temperatures exceeding 140 degrees under tents during the noon and lunch hours, cooking and serving food could produce heat casualties. Because of the extreme heat, never fill M-2 Burners or fuel tanks of immersion water heaters until they are ready to be used. Continuous maintenance is required to reduce malfunctions of equipment due to sand and dirt. Experience indicates that a 900-man battalion will require at least 6400 gallons of drinking water per 24-hour period (7 gallons per man) in extreme heat.

5010. Camouflage. The subsistence supply point and field mess area must be camouflaged to keep enemy aircraft, ground forces, or infrared sensors from finding it. The following are some precautions to take:

- a. Do not let the troops gather in large groups to eat.
- b. Make sure the area and equipment cannot be seen from the air.
- c. Screen the dining area from ground observation if it is set up near combat or hostile areas.
- d. Bury or retrograde disposable dishes and utensils, tin cans, and litter from packaged rations.
- e. Camouflage the area where refuse is buried. Class I personnel must be aware of policy on retrograde or disposal of condemned rations. Make sure food service and Class I personnel are aware of the policy on garbage disposal in their area of operations.
- f. Camouflage equipment and other things that might reflect light and keep them out of sunlight.
- g. Blackout procedures. Use light discipline when required. In blackout conditions cease all field kitchen operations. Eat MREs during these periods. Ensure the RBPs use appropriate lighting during night operations.

CHAPTER 6

CLASS I STORAGE AND ISSUE PROCEDURES

6000. Subsistence Storage at the Class I Point. This chapter contains guidance for class I storage and distribution operations. Included are procedures for perishable storage, semi-perishable storage, sanitation at storage points, pest control, security, inspections and ration issue.

a. Types of Storage. A covered storage area is in a walled and roofed structure. An open storage area provides protection that can vary from no protection at all to the protection of tarpaulins, tents, huts, or sheds. Class I supplies, even semi-perishables, keep best in covered storage. However, in the field you will have a rapid turnover, eliminating many of your long-term storage problems.

b. Methods. Store supplies so that those with the oldest date of pack are easily issued first. To prevent their total destruction in the event of enemy attack, store and disperse perishable and semi-perishable subsistence from separate locations.

6001. Perishable Storage. Maintain proper temperatures, humidity, and air circulation and store only compatible products together. Also, follow these storage precautions:

a. Temperature. Perishables stored below prescribed temperatures can suffer chill injury. The temperature for storing frozen subsistence should not exceed 0° Fahrenheit. During transportation, the temperature should not exceed 10° Fahrenheit. For ice cream, the recommended temperature is -10° Fahrenheit and should not exceed 0° Fahrenheit at any time. Chilled items should be stored at 34° to 40° Fahrenheit. Each storage container (mobile or fixed) is equipped with a thermometer that must be checked frequently. The thermometer should be checked, at a minimum, twice a day.

b. Humidity. Prescribed humidity levels prevent an item from gaining or losing moisture. A high humidity level allows moisture to condense on an item and be absorbed. A humidity level that is too low allows the item to dry out.

c. Air Circulation. Proper circulation of refrigerated air is the prime factor in keeping the temperature in all parts of storage spaces at recommended levels. It is also important in keeping eggs fresh and in preventing carbon dioxide from building up in fresh fruits and vegetable compartments. Use pallets to raise containers off of the floor and permit the free circulation of air. Stack containers so that there is a 4" wall clearance, a 2' ceiling clearance, with adequate working space between stacks. Use fan or duct systems to maintain proper circulation. Do not stack items in front of the refrigeration unit or the fan in prefabricated units.

d. Product Compatibility. Storing incompatible products together may result in color loss, taste changes, and odor absorption. Products should be grouped according to compatibility. Meat, eggs, and dairy products (odor-absorbing items) should not be stored with odor-producing items such as apples or citrus fruits.

e. Storage Precautions. As soon as frozen items are delivered, they should be transferred to freezer storage. If the product's temperature is higher than the temperature in the freezer, place the shipping containers on pallets or hand trucks. This allows the air to circulate and reduce the product temperature as quickly as possible. The containers should be stacked more compactly once a uniform temperature is achieved. Never refreeze items that have been thawed. Do not stack items so high that containers on the bottom are damaged and the contents are crushed and bruised. Egg cases should not be stacked more than 5 feet high. Store items so that the oldest lots, by date of pack, are issued first. The only exception to this first in, first out rule is when older lots are in better condition than newer ones. If perishables are stored properly, they should show no major loss of quality within 20% of their storage life.

6002. Semi-Perishable Storage. Semi-perishables are not as susceptible to spoilage as perishables. They may spoil if they are handled or stored incorrectly or if they are kept for too long. Properly storing and protecting semi-perishables ensures that products are tasty and safe for consumption during their shelf life and possibly beyond (After veterinary personnel inspect a product, its shelf life may be extended.)

a. Correct Storage. Do not stack items so high that boxes and their contents are damaged. Do not place items directly on the floor. Bagged items should not be stored in corners and no subsistence should be stored directly against walls. MRE cases may be stacked up to four pallets high. In open storage, items should be placed on pallets and organized for ease of access.

b. Freezing Temperatures. For dry or low moisture semi-perishable items, freezing temperatures do little or no damage. Freezing may cause damage to the packaging of items that have water as a content. Can seams (commercial and tray pack) may rupture and MRE pouches may be cut or punctured. This damage can lead to serious health risk if not properly handled and inspected by veterinary personnel. Metal cans are not generally engineered for freezing. Frozen cans and MRE pouches should not be rough handled as this may compound the problem. Storage life of semi-perishable rations is extended by lower temperature storage (from 50° Fahrenheit to as low as 32° Fahrenheit.) Frozen storage is not recommended.

c. High Temperatures. High storage temperatures encourage the growth of bacteria and molds, promote insect infestation, and shorten the approximate storage life of semi-perishable items. The serviceable storage life of MREs decreases as storage temperatures increase. MMTP rations have been designed to have a minimum shelf life of three years when stored at 80° Fahrenheit or six months at 100° Fahrenheit. In fixed warehouse facilities, semi-perishable items should not be stacked so high that they are damaged by higher temperatures near ceilings (hot air rises.) Items should not be stacked near hot water heaters, steam, heat pipes, or in metal buildings and trailers without adequate ventilation to prevent heat build up. Fans should be used to provide ventilation and to prevent excessively high temperatures. Do not store food items in direct sunlight. In open storage, natural cover can help reduce damage from direct sunlight and high temperatures. NOTE: Refrain from covering UHT milk and/or other subsistence items with black plastic in a field environment. Black plastic intensifies temperatures and causes rapid deterioration of subsistence.

d. High Humidity. Avoid high humidity when possible because it encourages the growth of bacteria, molds and promotes insect infestation. High humidity also causes dry items to absorb moisture, making them cake and harden. Loss of flavor and discoloration may also occur in some items. Humidity also causes metal containers to rust and boxes to weaken.

e. Exposure to Light. Items packed in clear containers may lose their flavor as a result of over-heating and become discolored when exposed to light for prolonged periods. To prevent this, keep clear containers boxed or in areas with reduced light exposure.

f. Pests. Prevent insects, birds, and rodents from entering storage areas as they damage food packaging and transmit disease.

6003. Handling of the MRE in Freezing Temperatures. The flexible film pouch used for MRE items such as the entree or wet pack fruit becomes less flexible or more brittle at temperatures below 0° Fahrenheit. The contents of the pouch freeze in random shapes, creating sharp edges or points. These edges and points may cut, puncture or otherwise damage the pouch if they are handled roughly. When the contents are thawed, bacteria can begin to grow and the food becomes unfit for consumption. Following the procedures below will reduce the possibility of damaged pouches and food-borne illnesses. MREs that become frozen during exercises should be kept frozen until issued for immediate consumption. If frozen MREs are returned to storage and thawed, they must be segregated and marked with a placard stating “HOLD, PREVIOUSLY FROZEN, RETURNED TO HEATED STORAGE ON (DATE), CLEARED FOR ISSUE (DATE -minimum of 30 days after returned to heated storage)”. Frozen MREs will be tempered to ensure that the center of pallets or boxes reaches room temperature (77° Fahrenheit). The MREs are then held at this temperature for thirty days and then inspected by VSP prior to issue. The time and temperature period stated will allow the contents of the pouches to react, if spoilage bacteria are present. Rations not intended for freezing should not be frozen. The product quality will deteriorate with each freeze/thaw cycle, but the food will remain wholesome as long as the pouch is not damaged. The MRE should not be cycled through more than five freeze/ thaw cycles.

6004. Storage and Handling of the Ration Supplement, Flameless Heater (RSFH).

a. Packaging. RSFHs are packed in both case lots (boxes), and as individual units within the MRE pouch. In bulk pack, each RSFH heater pad is packaged in a sealed polyethylene bag. Twelve RSFHs are packed into a plastic shrink-wrap sleeve. Each box contains 24 unit packs (288 RSFH). Each pallet of the RSFH contains 30 boxes and 8,640 heater pads. Pallets are wrapped in polyethylene, covered with a top cap, and strapped to protect the shipping boxes.

b. Storage. RSFHs packaged within the MRE box are not regulated by DOT therefore no special handling or storage is required. The following guidelines are applicable to bulk storage of the RSFH:

1. Specific storage guidelines are in DOD Regulation 4145.19-R-1.
2. Installation fire protection officials should be notified of location of stored RSFHs and may impose local storage decisions.
3. Handling and storing RSFHs present no health hazard beyond that of combustible materials.
4. Store boxes in dry storage areas where protection against the elements is provided. Wrapping or use of tarpaulins on pallets will aid in the prevention of water damage.
5. Storage under sprinkler systems that meet DOD standards is authorized. When possible, end bays should be used for the storage of RSFHs. Stacks of RSFHs are to be arranged for access to the stack's interior and removal to outdoors for fire fighting.
6. Quick response to fire detection and use of appropriate fire fighting agents is important. Fire fighting agents are to be present for both Class A and Class D protection. Any damaged boxes must be removed from storage, inspected and the contents repackaged in the required container or disposed of properly. Damaged boxes should be considered for first issue as a distressed item.
7. For proper disposal, the RSFH should be activated according to the instructions, then disposed of as ordinary waste. They may also be incinerated in a waste facility ensuring that all material is burned thoroughly.

c. Transportation (Bulk Pack Only). All transport vehicles (including air and sea cargo containers), other than military, are to use placards stating that the cargo is "Dangerous When Wet" material.

6005. Sanitation at Subsistence Storage Points. Sanitation in a subsistence supply activity must be maintained per NAVMED P5010. Food can cause illness and death if it becomes contaminated. Food that must be disposed of is a loss to the government and can have an adverse impact on mission accomplishment. Environmental protection laws and regulations must be followed when disposing of subsistence.

a. Personnel. Class I personnel should be neat, clean, and free of disease and infection before they are allowed to handle subsistence. They should not smoke or chew tobacco when handling subsistence. Disposable gloves used in handling fresh foods should be impermeable to contamination. Personnel must wash their hands thoroughly before starting work, before eating, after breaks and after using the head.

b. Area and Equipment. Storage areas should be kept clean, orderly and free of garbage at all times. Garbage should be disposed of in approved containers with tight-fitting lids. Spilled food should be cleaned up as soon as possible to prevent insect and rodent infestation. Scales and MHE should be kept clean. Handwashing facilities should be readily available for food service personnel.

c. Transportation. Vehicles used to transport subsistence should be clean, free of moisture and have pallets to keep subsistence off the bed of the truck. The front and rear flap should be lowered and secured during transport. Vehicles used to transport food are not to be used to transport garbage or petroleum products while transporting subsistence. The bed of the truck should be free of harmful protrusions such as nails that could puncture food containers. Refrigerated or insulated vehicles should be used to transport perishables when time, distance, and outside temperature could cause the temperature to rise above required safe levels for refrigerated items and frozen items.

6006. Pest Control. Class I and food service personnel must assist in controlling pests by maintaining properly established and sanitary operations. Pest-proofing the storage area, depriving them of food, and using appropriate extermination measures can control pests. When pests are discovered in the storage area, the preventive medicine activity must be notified immediately.

a. Insects. Insects, especially cockroaches, are hitchhikers. Incoming supplies should be inspected carefully for infestation and empty cartons should be removed from the premises promptly. In fixed facilities, screens should be used on outside doors. When supplies are received, doors and screens should be open for the shortest time possible. Cracks in the walls and floors should be filled. Rest rooms should be kept clean. Garbage cans should be kept covered with tight-fitting lids and the contents disposed of promptly to prevent breeding. Subsistence should be stored on pallets away from walls to eliminate hiding places and to facilitate inspection and cleaning. If at all possible, subsistence should be on shelves or dunnage a minimum of 6 inches off the floor or ground and a minimum of 4 inches away from the walls to permit cleanup of spills. In open storage, supplies should be covered with tarpaulins or clear plastic when practical. Broken containers of food should be cleaned up quickly and completely. If areas do become infested, insecticides are used for control.

b. Rodents. The first step in rat and mouse control is to prevent their entry into the storage facility. Holes should be covered or filled in and doors should close tightly. The next step is to eliminate rodent hiding places by keeping subsistence on pallets away from walls. Finally, their food sources should be eliminated by proper garbage disposal and good housekeeping. If areas become infested, traps and poison baits can be used for elimination. The use of poison baits must be approved by the medical authority. Their approval is based on compliance with environmental stewardship principles. All environmental laws and regulations must be adhered to in the use of poison baits.

6007. Security. The enemy may try to contaminate or destroy supplies. Subsistence supplies should be protected to prevent loss from enemy action, pilferage or theft during receipt, storage and issue.

6008. Inspections. Subsistence supplies are inspected from the time they are received until they are consumed. Inspections ensure that only food that is fit for consumption is received and issued.

a. Responsibilities. Inspections should be performed on all subsistence items before they are accepted. This inspection ensures that items are received in good condition and in the authorized quantities. A representative of the Army Veterinary Service is responsible for inspecting all animal-origin and perishable subsistence as it is received at a supply point. Semi-perishables are not inspected by the veterinary food inspector on receipt unless it is requested by the accountable officer for local procurement. If the subsistence is wholesome and complies with contract requirements and the contractor can be identified from container markings or shipping documents, the veterinary food inspector stamps the delivery documents. Veterinary food inspectors are also responsible for conducting inspections on subsistence in storage to detect early signs of deteriorating food. Cases of semi-perishables that pass inspection are stamped with an ITD. The ITD indicates the approximate remaining shelf life. Rejected items are reported to the accountable officer so he can initiate appropriate disposal action.

b. Inspection Types. There are three types of inspections. They are visual, sampling and full inspections.

1. Visual. Usually, subsistence supply Marines perform the visual inspection. The inspector checks the outside of the class I item or its container for damage or deterioration. Damaged containers, such as broken boxes and dented cans, are a good reason to request an Army Veterinary Service inspection.

2. Sampling. In sampling, the veterinary food inspector chooses a number of units at random and inspects them thoroughly. If any of the samples are damaged or deteriorated, the veterinary food inspector performs a full inspection. Items used during sampling inspections are accounted for on DA Form 3161 as an identifiable loss.

3. Full. The veterinary food inspector thoroughly examines all units of a particular item or shipment. Damaged or deteriorated items are set aside and the veterinary food inspector advises the accountable officer on

disposition of the items. Full inspections should be conducted when procuring items from sources not previously approved.

c. Inspection criteria. Certain criteria are used to inspect subsistence. These criteria are discussed below.

1. Canned goods. Individual cans should be inspected when there is reason to believe they may be damaged. If boxes are broken or bent, they should be opened and each can should be inspected. The veterinary food inspector should inspect cans that are rusted, swollen, leaking, or dented and those that have been stored for a long period of time or exposed to high temperatures.

2. MMTP rations. Tray packs are inspected for damage such as swelling or rust. Tray packs with any of the following defects should be set aside for further inspection and destruction:

- (a) Leaks from a pinhole, a fracture, or an incomplete seal where the contents of tray packs are on the outside of the container.
- (b) Rust that actually penetrates the tray pack causing leakage or excessive end seam rust that cannot be removed with a soft cloth and would enter the product when the tray pack is opened.
- (c) Dents that are so severe that they cause leakage or affect usability.
- (d) Swollen or outwardly distended tray lids bulging from internal pressure or swells caused by physical damage such as dents or overheating.
- (e) Buckles or bends in the top that extend into the end seam of the tray pack.

3. Other semi-perishables. Semi-perishables in jars, cardboard containers, and paper bags will spoil if they are mishandled or improperly stored. The containers should be inspected for signs of insects or rodents and damage from moisture or mishandling. Products in clear containers should be inspected for color changes. If any of these signs are evident, a veterinary food inspector should be called.

4. Fresh fruits and vegetables. Fresh fruits and vegetables should be inspected on receipt and every day while they are in storage. Fruits and vegetables must also be inspected for insect infestations including fruit flies, roaches, and worms. Preventive medicine and veterinary personnel must be notified if insects are seen. Since appearances are deceiving an effective test to determine if they are fit for consumption is to cut them open and taste them. Items that have been freezer damaged will appear glassy, and those that have chill injury may be discolored and have an off-flavor.

5. Frozen items. Frozen items, including meat should be frozen solid when received. If are thawed, they must be used right away if approved by the veterinary food inspector. Thawed items should never be refrozen. Packages are checked on all sides for ice, which is a sign that they have thawed and been refrozen. Icy packages should be checked by the veterinary food inspector.

6. Other perishables. Eggs are checked for breakage and freshness. Eggs should not be cracked, checked or dirty. Take at least one egg per case and break it open. If the white clings to the yolk and is firm, high and does not break easily and there is no odor, the eggs are acceptable. The temperature of the egg should be 41° Fahrenheit. If not, contact the veterinary personnel. Other perishables are inspected for cleanliness and to see that they are chilled properly.

6009. Ration Issue. Class I supplies used during field operations will normally be picked up by the using unit at the Material Readiness Platoon issue point. Upon receipt of the rations appropriate accounting measures are the responsibility of the receiving unit. Either manual or automated means will be used to reflect the receipt and issue of each item. Unitized rations are recorded under a single NSN for each module type, while “A” rations and supplements will be accounted for.

CHAPTER 7

REDEPLOYMENT

7000. Planning Factors. This chapter addresses preparation for the end of field operations, closing out the site, moving the unit back to the home station, handling residual class I items, and accounting for supplies. Planning class I and food service requirements for redeployment is equally as important as planning for deployments.

7001. Preparing For Redeployment. The mess chief must ensure that enough class I supplies are available to sustain the unit enroute to its home station. If residuals are present at the end of the exercise or deployment, turn-in excess class I supplies to the supporting supply activity. Attend to detail and coordinate with your commander and staff to ensure that the unit's movement is smooth.

7002. Closing the Deployment Site. Following the correct procedures for closing the field mess and class I areas of operations is extremely important. Consideration must be given to the environmental impacts caused by soakage pits, grease traps, trash pits and incinerators. There are several U.S. Army field manuals (FM 5-20, FM 21-10 and FM 21-10-1) that provide on closing your field site. Also, refer to the field food service equipment technical manuals and Chapter 3 of this manual for the correct methods of cleaning and maintaining equipment before movement back to home station.

7003. Moving the Unit to the Home Station. It is essential that the unit be prepared to provide food service support during redeployment. The commander and unit embarkation officer should be the first stop in gathering information. They will provide the specifics of when, how and where the unit will move. Also, they can provide specific food service needs such as convoy rest halts, railhead support and overnight commitments.

7004. Accounting For Residuals. Turn in all unopened modules, boxes of MREs and excess/ loose semi-perishable "A" and "B" rations. At the end of the field operation or deployment, the mess chief must coordinate with the food service officer to transfer all loose MREs and residual "B" and "T" ration items to another field mess or supporting garrison messhall.

CHAPTER 8

SAFETY AND SANITATION

8000. Overview. Field conditions in modern warfare can be altered rapidly and requires foresight in order to deal with environmental stresses. Urban warfare may require troops to deploy into an area that previously had modern public utilities such as potable water lines, sanitary sewers and waste disposal. Overnight, areas such as this can change to an urban disaster area where all water, food and services are suspect of contamination or have been destroyed.

8001. GENERAL CONSIDERATIONS.

a. In addition to preparing and serving meals, food service Marines will have to set up a field mess site or mobile kitchen(s), set up and operate sanitation unit(s), construct and maintain field expedient hand-washing devices, dig soakage pits, and distribute food to areas away from the field mess area. These inherent tasks result in long working hours, so augmentation with mess attendants is absolutely necessary. The number of personnel required depends on unit feeding strength, mission, type of ration and remote site feeding versus consolidated feeding.

b. Field food service equipment is inherently different from that used in garrison. Ensure that all authorized T/E equipment is operational, and that an adequate preventive maintenance program is in place. Marines should be properly trained in the use and safety of field mess equipment before they attempt to use it. This is particularly important when using food service equipment that is operated with combustible fuels. Equipment technical manuals provide specific guidelines on the safe operation of equipment.

c. NAVMED P5010, chapter 9, provides guidance on field food service sanitation. Keeping the field mess area safe and sanitary takes more time in the field than in garrison. Food and water supplies may not be as carefully controlled as they are in garrison. Regular and careful inspection of food is of paramount importance and can help prevent food borne illnesses. Entire armies have been defeated by such disease outbreaks resulting from the mishandling of food and food-related waste. To prevent these diseases, the food service personnel must:

1. Obtain food and water from approved sources.
2. Prevent food contamination by ensuring the use of proper food handling, storage and utensil/equipment cleaning procedures.
3. Retard the growth of microorganisms through the use of proper time and temperature controls.
4. Train and motivate personnel in food sanitation standards and in personal health and hygiene matters.
5. Properly dispose of all types of food-related waste (garbage, rubbish and liquid kitchen waste) as outlined in NAVMED P5010, chapter 9.
6. Clean vehicles used for transporting rations.

d. Perishable Rations (“A” rations) require refrigeration. Therefore, extreme care should be used in handling “A” rations due to the increased potential for food borne illness.

e. Food Service Officers should prepare local standing operating procedures (SOPs) clearly outlining the units system for meal distribution. The situation will dictate whether there will be a central distribution site or whether food service Marines will transport the meals.

f. Because of limited facilities in the field the use of proper sanitary measures is even more important than it is in garrison messhalls. The following measures are emphasized:

1. To protect against flies food handlers should keep serving containers covered unless actually in use.
2. Field dish washing is accomplished by either a three-compartment sink or the use of three 32-gallon corrugated cans, each with an immersion heater. The first can/compartment in the wash line contains hot (but not boiling) soapy water. The second and third cans/compartments hold clear boiling water. Proper temperatures for each sink/compartment are listed in NAVMED P5010, chapters 1 and 9.

8002. Combat Field Feeding.

a. Logistical support areas in the theater are high priority targets for enemy NBC employment. Sophisticated delivery systems for NBC munitions allow the enemy to employ such munitions from the forward edge of the battle area (FEBA) to the rearmost boundaries of the theater. The main countermeasure to this threat is the ability to continue operations while subjected to an NBC attack. Marines must still receive some type of ration to eat, without delay that is safe to consume. Although the subsistence may be safe, contaminated cooking utensils and equipment may require the use of PORs (MREs, RCW, etc.). The tactical situation and the priorities of decontamination will determine how long PORs will have to be consumed.

b. Promote safety awareness. Safety during field operations may be called “common sense in action”. Food service personnel can prevent many accidents by using common sense as they work. Mess chiefs should provide safety guidelines through daily meetings and SOPs. Guidelines should be developed to stop unsafe practices and working conditions and careless use of equipment. Marines must be taught how to recognize unsafe condition and how to rectify it.

c. Exercise caution when opening MMTP rations, especially when using hand-held can openers. Use mounted MMTP ration openers when possible. Do not use knives or other sharp implements to open corners that the fully modified can opener misses. A P38 opener is included in each module for use when a hand-held can opener is not available. Also, be sure to tilt heated, swollen cans in a safe direction to avoid burns from hot juices.

d. Food service personnel must always be alert when they prepare or serve food. Burns, collisions and falls are common accidents in field messes. Training can curtail unsafe working conditions and careless use of equipment. Accidents cost money through the loss of man-hours and damage or destruction of food and equipment. The resulting loss of personnel, subsistence and equipment could impact negatively on mission accomplishment. For detailed information on safety refer to DOD Regulation 4145.19-R-1.

8003. Base Camp Feeding.

a. All food service and mess attendant personnel shall be certified as food handlers by medical authorities in accordance with the current addition of NAVMED P5010.

b. Potentially hazardous foods (PHF) will not be retained as leftovers.

c. When “A” rations are served in the field, adequate refrigeration support must be provided. Where adequate refrigeration capability is not available, “B” or “T” rations, or PORs will be used exclusively.

d. Inserts must be used with insulated food containers. Inserts will be cleaned and sanitized prior to use. Containers will be pre-chilled or pre-heated as appropriate prior to filling. Food will be brought to safe temperatures prior to placement in containers. PHF held in insulated food containers for more than 4 hours will be discarded as food waste.

e. Use of individual serving condiments is preferred in the field. However, condiments may be dispensed from sanitary dispensers.

f. Field-expedient hand washing facilities will be provided at food preparation areas.

g. Waste will be disposed of to minimize insect and rodent attraction. Garbage and rubbish will be buried, incinerated, or disposed of according to local requirements.

h. Fresh fruits and vegetables grown in areas where human excreta is used as fertilizer, or where gastrointestinal or parasitic diseases are expected to be prevalent will not be consumed raw except with the approval of appropriate medical authorities.

Note: When authorized for consumption, fruits and vegetables, including leafy vegetables may be eaten raw if thoroughly washed in clean potable water, then disinfected by use of Disinfectant, Food Service (NSN 6840-00-810-6396), according to labeled packet instructions. Where food service disinfectant is not available, emergency disinfection of fruits and vegetables may be accomplished by thoroughly washing then soaking for 30 minutes in a 200-ppm chlorine solution or by immersion in potable water at 160 degrees Fahrenheit for 1 minute. The chlorine solution is prepared by mixing 1 tablespoon of household liquid bleach (NSN 6910-00-598-7316) with 1 gallon of cool potable water.

i. Trash management. Commanders will determine, based on the scenario and federal, state, local or host-nation laws whether to burn, bury, back-haul, or use dumpsters to dispose of waste from field kitchens. Ensure dissemination of the policy on garbage disposal in an area of operations. Waste must be removed from the kitchen area at least daily. Proper disposal of kitchen waste is also essential in limiting the battlefield signature your unit leaves the enemy. Dispose of liquid and solid wastes as discussed below:

(1) Liquid waste. Dispose of liquid waste in a soakage pit or trench that is equipped with a grease trap that strains out solid matter and grease. The soil absorbs the liquid waste. Figure 8-1 shows how to build a grease trap and soakage pit. Two pits are needed so that each pit can rest every other day. In porous soil, a soakage pit 4 feet (1.2 meters) square and 4 feet (1.2 meters) deep will take care of 200 gallons (760 liters) of liquid per day. If the ground water level is close to the surface or if there is rock or clay near the surface, have a soakage trench dug. Figure 8-2 shows how to build a soakage trench with a grease trap. Due to environmental concerns, liquid or solid grease may require separate disposal.

Figure 8-1. A grease trap and soakage pit.

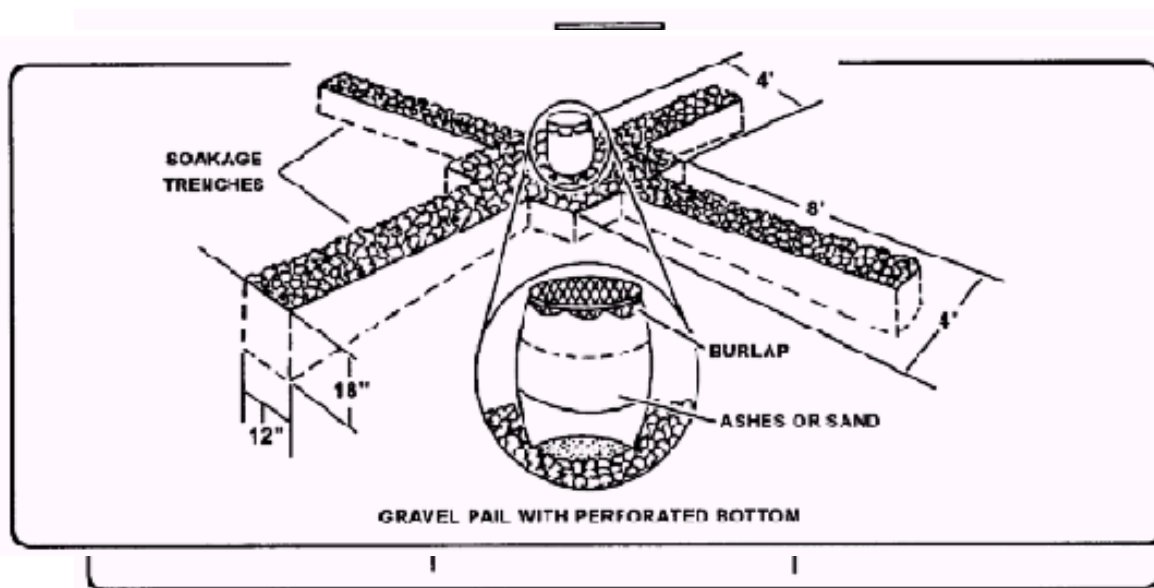
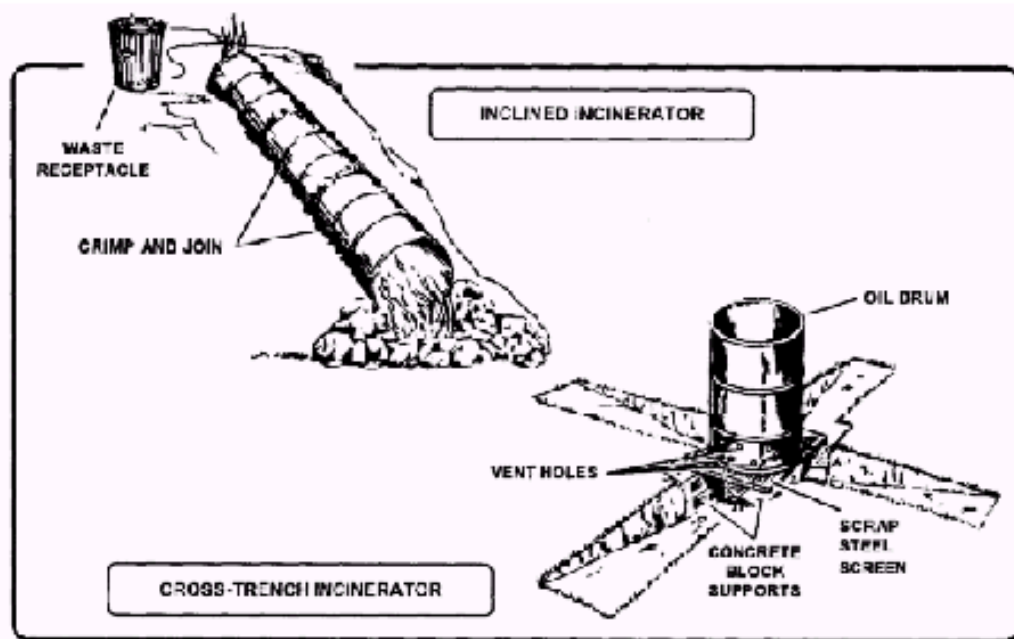


Figure 8-2. How to build a soakage trench with a grease trap.

(2) Solid waste. Bury, burn, or back-haul solid waste. These procedures are described below.

(a) Burying. During peacetime, most state laws prohibit burying trash. However, during wartime if the unit will be at a site for less than one week bury solid waste in pits or trenches. These pits or trenches must be at least 27 meters (90 feet) from the dining area and at least 27 meters away from any water source used for cooking or drinking. Use the garbage pit if the unit will be at the site for only one day. If the unit will be at the site for two days to a week, use a garbage trench. Ensure cans are flattened and boxes are broken up before they are dumped. MMTP ration cans should be nested one inside the other.

(b) Burning. During peacetime, most state laws prohibit burning of trash. During wartime, if the unit is going to be at the site for more than one week, burn solid waste in an open incinerator. Use an inclined incinerator or a cross-trench incinerator. Incinerators will not burn wet garbage, so the liquid waste must be



separated from the solid waste. This can be done by straining the garbage through a coarse strainer, such as an oil bucket, can or a 55-gallon drum with holes in the bottom. Pour the liquid through a grease trap into a soakage pit or trench then burn the solids that are left. Garbage that will not burn must be buried or hauled to a disposal site. Field incinerators must be at least 45 meters (150 feet) from the mess tent and dining areas so that the odor will not affect the Marines. Figure 8-3 shows how to build inclined and cross-trench incinerators. NOTE: Incinerators make smoke. Do not use an incinerator if it will possibly disclose your location to the enemy.

Figure 8-3. Inclined and cross-trench incinerators.

(c) Backhauling waste. When the operation plan calls for returning waste to a designated disposal point, the mess chief must arrange for transportation support. Waste should be bagged or boxed when possible.

CHAPTER 9

PROTECTION FROM CONTAMINATION

9000. Personnel Protection. Generally, food is not prepared or served in an environment contaminated by NBC agents, nor are food service Marines trained to decontaminate subsistence items. This is the responsibility of veterinarians, Naval medical personnel and NBC specialists. It is important to continue operations only after ensuring adequate individual protection. Field messes must be moved to uncontaminated areas and decontaminated before food service operations can be resumed.

9001. Food Protection. Food must be protected from NBC contamination. Procedures for subsistence protection must be a part of operational plans and SOPs at all levels of food service operations. Consuming contaminated food may cause illness, injury or death. Food stored outdoors should be under overhead cover as mustard or VX agents will damage or degrade most protective wraps. Some food items may be decontaminated and consumed, however, decontamination is often a difficult and time-consuming process. Subsistence must be stored in ways to provide maximum protection in the presence of NBC contaminants. Planning for storage may mean the difference between having edible or non-edible subsistence. Foods that are packed in cans, bottles, airtight foil or film wraps, as well as food packaged in sealed boxes or multi-layered wrappings may be stored outdoors or in partially protected areas. Foods not packaged in this manner must have covered storage inside if to protect it from NBC contamination.

9002. Food Inspection. Food or water that may be contaminated by nuclear fallout or biological or chemical agents must be inspected. The Army veterinary services has the sole responsibility for monitoring and recommending food decontamination or disposition procedures and Navy preventive medicine handles water. If food or water becomes contaminated, it must not be consumed unless it is first decontaminated or approved for consumption. Equipment or personnel may contaminate food or water that is free from contamination, so they must be inspected as well.

9003. Disposal. Generally, food and water in airtight containers can be consumed after the containers have been decontaminated. Discard unprotected food and water except in extreme emergencies. Decontaminate unprotected food and water only when there is no practical alternative. All disposed contaminated items must be marked and treated as NBC hazard.

9004. Decontamination. Dispose of foods that cannot be decontaminated according to local laws or military regulations. If food preparation equipment or food service personnel have been exposed to NBC agents they must be decontaminated. Personnel are decontaminated with the M258-series decontamination kit. Food service equipment should be decontaminated by power driven decontamination equipment or by steam cleaners. A hot water and soapy wash must follow to ensure all decontaminates are removed before food products can be prepared.

Appendix A

Glossary

“A” ration substitutes: “A” ration supplements are perishable items that replace semi-perishable, like items and add variety, dietary fiber and troop acceptability to the “B” ration feeding plan. Supplements normally consist of milk, bread or bread-like products, apples, oranges, lettuce, tomatoes and a combination of 50% fresh and 50% dehydrated eggs.

“B” rations: “B” rations consist of semi-perishable items, mainly canned and dehydrated, which do not require refrigeration. “B” rations are unitized in 100 portion modules, under a single National Stock Number (NSN). “B” ration modules contain everything necessary to prepare 100 servings of a particular meal, to include paper products. There are currently 10 breakfast and 10 lunch/dinner “B” ration menus available.

bread, shelf stable (BSS): BSS was developed as an alternative to MRE crackers. It provides 200 calories, mostly carbohydrates and is available in both white and whole wheat. BSS are shipped 96 packages per case.

combat accountability: A modification of normal (peacetime) operating accounting and reporting requirements, rendered necessary by combat conditions and implemented only when directed by the appropriate authority.

common-service feeding: The providing of meals by one military service to entitled personnel of another service for which an individual or service reimbursement is not required.

cross-service feeding: The providing of meals and/or bulk subsistence to members of Reserve components, other military services and foreign governments that require reimbursement from the agency receiving support.

enhancements: Enhancements consist of items such as hot & cold beverages, soups, fresh fruits and vegetables provided to enhance operational rations.

field feeding: Feeding in a field mess while deployed on exercises/operations in an expeditionary/austere environment.

field duty: Service by a member when the member is subsisted in a government mess or with an organization drawing field rations, and:

- a. The member is under orders operating against an actual or potential enemy, or
- b. The member is serving on maneuvers, war games, field exercises, or similar types of operations.

field mess: A galley operated in the field, using field food service equipment.

food service Marine: An enlisted Marine in grades Private through Master Gunnery Sergeant who possess MOS 3381, Food Service Specialist, or 3361, Subsistence Supply Clerk.

food service officer (FSO): A limited duty officer (LDO), Chief Warrant Officer (CWO), or Warrant Officer (WO) who possess MOS 3302. FSOs are generally assigned at the MEF and MSC level only.

fuel bar, trioxane (FBT): FBTs are used to heat water for MREs and RCWs. The FBT is packaged with 3 bars to a package and 400 packages to a box (1200 bars). It is normally issued on a one bar to one-man basis for MREs and two boxes (six bars) per RCW.

host nation feeding: Host nation feeding may consist of either of two types of support: Host Nation Support (HNS) and Host Nation Messing. (1) Host Nation Support is defined as a procedure wherein bulk subsistence items are procured from a Host Nation and prepared by Marine Corps food service personnel. (2) Host Nation Messing

(HNM). Involves Marine Corps personnel subsisting in a Host Nation messhall (civilian or military) in which the Marine Corps will reimburse the Host Nation for meals provided (non-contractor support).

meal module tray tack (MMTP) /“T” rations: MMTP rations are expeditionary rations that are fully prepared, thermally processed, shelf-stable foods developed for use with the Tray Ration Heating System (TRHS). MMTP rations are unitized in 18 man serving modules, and there are currently 10 breakfast and 10 lunch/dinner MMTP ration menus available

meal, ready to eat (MRE): The primary individual ration used by the Marine Corps is the MRE. It is designed for individual or group feeding when the situation will not permit a field kitchen to be established. The MRE consists of 12 menus, 12 meals (4 rations) per box, any three of which constitute a ration. Any combination of the three meals will give a nutritionally complete ration for one person for one day.

messman: An enlisted Marine outside the 3300 occupational field detailed to the food service platoon that assists in the serving of food and cleanup.

operational rations: Rations composed of semi-perishable items prescribed for individuals performing operational duty in times of war or other emergencies. Operational rations also may be used in peacetime for training, emergencies, or travel in order to rotate stocks. “B” rations, “T” rations and flight meals are examples of operational rations.

packaged operational rations (POR): A ration composed of semi-perishable items specially packaged, precooked, or prepared for personnel performing operational duty in time of combat or other emergency. PORs are used in peacetime for emergencies or field training in order that stocks may be rotated. Examples of PORs include the Meal Ready-to-Eat (MRE) and the Ration, Cold Weather (RCW).

ration, cold weather (RCW): The RCW is specifically designed for cold weather activities. This ration is lighter and smaller than the MRE (based on three MREs versus one RCW). It provides an entree, snacks, hot beverage mixes, and the components do not freeze. One ration provides a complete daily nutritional requirement of 4500 calories for one individual per day. The RCW is packaged in two plastic pouches with an issue ratio of one ration per individual per day.

ration supplement, flameless heater (RSFH): a chemical reaction heater developed to heat MRE entrees. RSFHs are packed in each box of MREs and shipped in a case of 288 units.

ration supplement sundries pack (RSSP): The RSSP is designed to provide necessary health and comfort items for deployed units when exchange facilities or ship stores support is not available.

tray ration heating system (TRHS): The TRHS is composed of a Tray Ration Heater (TRH) and associated collateral and support equipment that form a component whose singular purpose is the preparation of MMTP. Capable of being installed on a HMMWV, the TRHS is a mobile system with heat-on-the-move capability to feed 250 hot MMTP ration meals to personnel in remote areas.

ultra-high temperature (UHT) milk: UHT Milk is an enhancement to operational rations, and is packaged in 8 oz. containers in four flavors (White, Chocolate, Strawberry, and Vanilla.)

Appendix B

Acronyms

BSS: bread, shelf stable

FSO: food service officer

FBT: fuel bar, trioxane

HNS: host nation support

HNM: host nation messing

MRE: meal, ready to eat

POR: packaged operational rations

RCW: ration, cold weather

RSFH: ration supplement, flameless heater

RSSP: ration supplement sundries pack

TRH: Tray Ration Heater

TRHS: tray ration heating system

UHT milk: ultra-high temperature milk

Appendix C

Food Service Deployment Planning Checklist

NOTE: Planning information discussed in this appendix is often available but frequently does not get disseminated to the food services personnel who need it for planning. The following section provides a guide for consideration during deployment activities.

1. MISSION

- a. What is the unit's mission?
- b. What are the geographical/climatic/environmental factors impacting on mission accomplishment.
- c. What is projected length of mission?
- d. Evaluate logistic support plan and CSS annex to the OPORD?
- e. What headquarters is directing the deployment?
 1. Are supporting units specified?
 2. When does the external support begin?
 3. What support will the unit receive?
 4. Is there a deployment contingency plan?
 5. What food service personnel and equipment are included in the deployment plan? Do they travel with the unit? Who supports if food service personnel and equipment are not included in the initial deployment?
 6. Is there an internal logistical support plan or Class I portion of the combat support annex?
 7. Should the basic load of days of supply (DOS) of Class I be issued to the individual Marine prior to deployment?
 8. Will the basic load be consumed during the operation?
 9. Have the supply source and operational dates for Class I been identified?
 10. What are lead times for ration/supply requests?
 11. What is the method of Class I distribution?
 12. What is the flow of requisitions and Class I to using units?
 13. What are Class I requirements to the supporting organization?
 14. Where are supply and service locations (Class I, water, fuel and landfill)?
 15. What is the trash removal plan?
 16. Are units trained in trash removal/disposition procedures?
 17. What is the subsistence retrograde plan?

18. Are veterinary personnel available for subsistence support requirements?

19. If there are host nation support facilities, do they meet U.S. sanitation guidelines? (Refer to NAVMED P5010)

20. Has funding for the host nation support been established?

2. PERSONNEL

- a. Evaluate mission requirements to determine personnel needs.
- b. Determine status of personnel, experience, training and capabilities.
- c. Evaluate projected workload to determine mess attendant support requirements.
- d. Determine tours of duty for food service and subsistence personnel.
- e. Determine training requirements, to include familiarization with unit/local SOPs and environmental standards in the area of operations.
- f. Are personnel trained in accountability procedures?
- g. What are cash meal payment and/or field meal reimbursement procedures?
- h. Review medical threat briefing with particular attention to potable water supply, chlorine residual, foodborne illnesses of local populations and sanitary quality of local food supply.

3. EQUIPMENT

- a. Review T/E, CMRs and temp loan receipts for equipment to determine shortages, if any.
- b. Evaluate status of equipment on hand to determine maintenance requirements.
- c. Evaluate workload and mission to determine supplemental equipment and storage needs.
- d. Evaluate on-hand spare parts and order shortages.
- e. Evaluate projected ration mix to determine refrigeration and ice requirements.
- f. Evaluate type and number of vehicles to determine packing and loading plans.
- g. Evaluate maintenance support to determine resupply of equipment and spare parts in the field.
- h. Review load plans for accuracy.

4. SUPPLIES

- a. Evaluate projected workload and mission to determine requirements for all disposable and expendable supplies.
- b. Determine required stock levels. Prepare load list for required items.
- c. Project fuel consumption to determine needs.
- d. Forecast daily potable water consumption to determine water needs.

- e. Evaluate mission support to determine resupply procedures for fuel, water and disposables.

5. SUBSISTENCE

- a. Determine ration accounting methods. Procure appropriate forms and establish procedures.
- b. Determine feeding plan, ration mix/theater menu/type of rations needed.
- c. What is the menu and ration cycle?
- d. Has the menu been published and distributed?
- e. Have enhancements and supplements been requested and programmed?
- f. Have warming and cooling beverages been considered, ordered, and funded?
- g. Determine number of personnel to subsist. Establish amounts of rations to request.
- h. Evaluate issue and request cycle from supply activity to determine timely submission of ration requests, reports and forms.
- i. Determine daily need for ice to be requested. Is there a need for potable ice?
- j. Evaluate food storage procedures to determine security needs.
- k. Review inventory management procedures to reduce/control waste, loss, and excessive residuals.

6. MISCELLANEOUS

- a. Check publications and forms needed for the deployment.
- b. Determine local waste disposal procedures and locations.
- c. Coordinate plans for site selection and layout of the field mess.
- d. Coordinate with supported units. Determine feeding level requirements, and the need for remote site feeding.
- e. Determine meal-serving periods.
- f. Establish deployment teams for sending the TRHS forward to deployed units.
- g. Review equipment operations, safety and sanitation requirements with your team.
- h. Identify any site-specific environmental issues.